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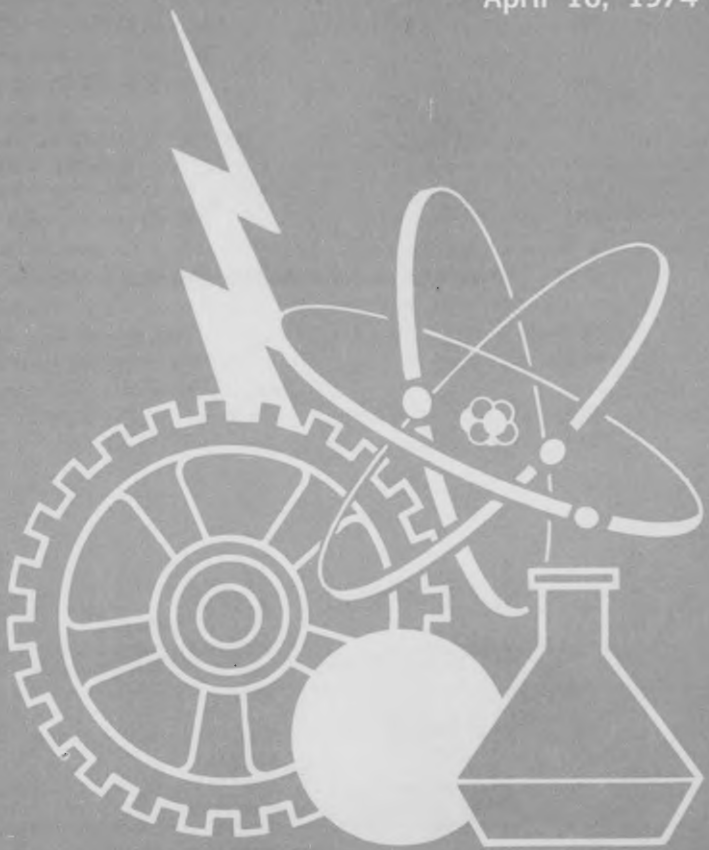

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

April 16, 1974 Volume 921 Number 3

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PATENT OFFICE NOTICES

Termination of the "Rules of Practice in Patent Cases" Booklet

The superintendent of Documents has informed the Patent Office that the basic rule book entitled "Rules of Practice in Patent Cases" is out of print and no longer available. Furthermore, Revision 3, dated July 1973, is the last revision covered by the current subscriptions. A booklet entitled "37 Code of Federal Regulations," published by the Office of the Federal Register, contains all patent rules and forms, as well as trademark rules and forms and copyright rules. Inasmuch as this publication is revised annually and is more economical to both the public and the Patent Office even if repurchased annually, the Patent Rules of Practice booklet will not be reprinted, thereby terminating this duplication of printing. Consequently, it is suggested that persons desiring a copy of the patent rules order a copy of "37 Code of Federal Regulations" from the Superintendent of Documents. The price for the most recent issue, dated July 1, 1973, is $1.75.

The Patent Office will supply all patent examiners and other appropriate employees with a copy of "37 Code of Federal Regulations" annually beginning with the July 1974 edition.

Since the inventory of the Trademark Rules of Practice booklet is in large supply, it will continue to be offered for sale by subscription from the Superintendent of Documents and updatings will continue to be published periodically.

C. MARSHALL DANN,
Mar. 18, 1974. *Commissioner of Patents.*

Change in Format for Publishing Trademarks for Opposition

Because of the adoption of the international classification of goods and services by the United States as of September 1, 1973 (see OFFICIAL GAZETTE of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the OFFICIAL GAZETTE of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the OFFICIAL GAZETTE entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see OFFICIAL GAZETTE of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 21, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class
Section 2. International classification—Application in one class
Section 3. Prior United States classification—Application in more than one class
Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Mar. 22, 1974. *Assistant Commissioner for Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,129,332, D. Mastini, TELEPHONE SYSTEM, **filed** Jan. 3, 1962, D.C. Md. (Baltimore), Doc. 13521–C, *Domenico Mastini v. International Telephone and Telegraph Corporation.* Action dismissed with prejudice by the Court for failure of plaintiff to prosecute the same, Oct. 29, 1973.

2,881,010, L. Bouma, DETACHABLE CONNECTOR FOR MILKING SYSTEMS OR THE LIKE, **filed** Oct. 23, 1973, D.C., W.D. Wis. (Madison), Doc. 73–C–332, *Sta-Rite Industries, Inc. v. DEC International, Inc.*

2,911,729, B. A. Wood, METHOD OF AND MEANS FOR STEAM TREATING AND VIBRATING GARMENTS; **3,576,661**, J. W. Dekoekkoek, PROCESS AND SYSTEM FOR DEWRINKLING GARMENTS, **filed** Oct. 4, 1972, D.C., E.D. Wash. (Spokane), Doc. 3717, *Western Automation Corporation and Elmer J. Williamson v. Crystal Laundry Company of Seattle and Colmac Industries, Inc.* Decree of dismissal by consent was entered on Sept. 14, 1973.

2,918,420, R. C. Sabins, ELECTROLYTIC SYSTEM; **2,982,714**, same; **2,998,371**, same, CONTROL SYSTEM; **3,054,743**, same, ELECTROLYTIC SYSTEM; **3,108,939**, same, PLATINUM PLUG-VALVE METAL ANODE FOR CATHODIC PROTECTION. **3,362,900**, same, SYSTEM FOR CATHODICALLY PROTECTING A STRUCTURE; **Reg. No. 673,493** (CATHANODE), Sabins Dohrmann Co., **filed** Sept. 1, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2098–JWC, *Sclectro-Chem Company v. Lockheed Aircraft Corporation.* Filed order of dismissal without prejudice to the right to reopen the action within 60 days if settlement is consummated, entered Oct. 18, 1973.

2,919,200, Dubin and White, BACTERIOSTATIC PLASTIC, **filed** Apr. 6, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73–C–203 (4), *Maurice T. Dubin and James S. White v. American Air Filter Co., Inc. and Walgreen Drug Stores.* Stipulation for dismissal filed; Cause dismissed, Aug. 23, 1973.

2,984,841, N. E. Wilson, TOILET BOWL DEODORIZERS AND HOLDERS THEREFOR, **filed** Oct. 30, 1972, D.C., E.D. Mo. (St. Louis), Doc. 72C681(1), *Irwin-Willert Co. v. Puro Co., Inc.* Plaintiff's dismissal of cause pursuant to FRCP Rule 21(a)(1), filed Feb. 23, 1973.

2,998,371. (See 2,918,420.)

3,032,044, A. L. Pansini, AUTOMATIC SWIMMING POOL CLEANER, **filed** July 13, 1973, D.C. Nev. (Las Vegas), Doc. C–LV–2087, *Castle & Cooke, Inc. et al.* v. *Vegas Outdoor Products, Inc.*

3,040,968, Long and Crane, WRAPPER FOR PACKAGED PRODUCE, **filed** Sept. 27, 1973, D.C., N.D. Calif. (San Francisco), Doc. C–73–1731, *Standun, Inc.* v. *Trans International Trading Corporation.*

3,054,743. (See 2,918,420.)

3,103,705, I. Letica, MASTER DIE ASSEMBLY, **filed** Aug. 22, 1973, D.C., E.D. Mich. (Detroit), Doc. 74–70238, *Joseph Noonan et al. and stockholders of I & G Mold Corporation* v. *Ilija Letica, Gudrun Letica, Letica Corp. and Belleville Die Shop, Inc.*

3,108,939. (See 2,918,420.)

3,170,063, J. A. Webb, Sr., HIGH SPEED BINARY ADDER AND/OR SUBTRACTOR CIRCUIT, **filed** Mar. 13, 1972, D.C. Ariz. (Phoenix), Doc. C–72–129 WCF, *Joseph A. Webb, Sr.* v. *Motorola Semiconductor Products, Inc.* Case dismissed for failure to prosecute, Sept. 19, 1973.

3,182,808, Benoit, Gingras and Duprey, ARTICLE HOLDER, **filed** May 26, 1970, D.C.N.J. (Newark), Doc. C–677–70, *Roland A. Benoit, David Ziedman and Joseph Mirkin* v. *Frederick M. Ballard, doing business as BBB Plastics Products.* Order dismissing action, Sept. 17, 1973.

3,245,534, Smith, Kramer and Danko, METHOD AND APPARATUS FOR MAGNETIC CURRENCY DETECTORS; **3,253,709,** M. Jenkins, CURRENCY DETECTORS; **3,265,205,** C. L. Chumley, PAPER CURRENCY DETECTORS HAVING MAGNETIC AND OPTICAL SENSING MEANS, **filed** Aug. 17, 1972, D.C. Mich. (Grand Rapids), Doc. G237–72CA, *U.M.C. Industries, Inc.* v. *Rowe International, Inc.*

3,253,709. (See 3,245,534.)

3,262,378, Schrimper and Page, ADJUSTABLE STRIKE-OFF PLATE FOR FINISHING MACHINES; **3,453,939,** Politz, Schrimper and Fairchild, BITUMINOUS PAVER, **filed** May 20, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1233, *Iowa Mfg. Co. of Cedar Rapids, Iowa* v. *Barber-Greene Co.* On stipulation it is hereby ordered cause dismissed with prejudice, Sept. 13, 1973.

3,265,205. (See 3,245,534.)

3,265,290, A. J. Cali, AXIAL FLOW COMPRESSORS FOR JET ENGINES, **filed** Oct. 26, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73C–1596, *Anthony J. Cali* v. *Japan Airlines Co. et al.*

3,282,483, K. L. Babcock, BACK PACK, **filed** Aug. 28, 1973, D.C., E.D. Calif. (Fresno), Doc. F–855–C, *Kenneth L. Babcock* v. *Denali Co., Inc., Arthur A. Roberts and Arthur L. Scott.*

3,313,304, L. R. Beyer, BINDER, **filed** Feb. 22, 1973, D.C.N.J. (Newark), Doc. C–246–73, *Richard Metals Inc.* v. *The Lewart Company, Lewis R. Beyer and Charles Leonard, Inc.* Consent order for permanent injunction; dismissing complaint as to Charles Leonard, Inc., June 15, 1973, order of dismissal of action as to Lewis R. Beyer and The Lewart Company, Sept. 24, 1973.

3,362,900. (See 2,918,420.)

3,368,843, D. F. Caldemeyer, CHAIR BASE; **3,371,958,** Caldemeyer, Caldemeyer, Mosier and Gates, COMBINATION RECLINING AND ROCKING CHAIR; **3,434,755,** Caldemeyer, Caldemeyer and Gates, same; **3,494,660,** Caldemeyer and Caldemeyer, RECLINING CHAIR STRUCTURE, **filed** Apr. 3, 1973, D.C., S.D. Ind. (Evansville), Doc. EV 73–C–23, *Flexsteel Industries, Inc.* v. *Daniel F. Caldemeyer and Lloyd O. Caldemeyer.* Order entered dismissing case with prejudice, as to all counts of the complaint and counterclaims, Nov. 1, 1973.

3,371,958. (See 3,368,843.)

3,380,455, S. Glogover, UNDERGARMENT, **filed** May 17, 1968, D.C., S.D.N.Y., Doc. 68–C–2039, *Milady Brassiere & Corset Co., Inc.* v. *De Luxe Girdlecraft Co., Inc.* Filed order dismissing action for lack of prosecution, Oct. 24, 1973.

3,427,997, Brown, Butler, Carter, Ferik and Ogle, INFLATABLE BULKHEAD FOR RAILROAD CAR; **Re. 27,615,** same, **filed Sept. 28, 1973, D.C., N.D. Ill. (Chicago),** Doc. 73c2498, *General Foods Corporation et al.* v. *Unarco Industries, Inc.*

3,434,755. (See 3,368,843.)

3,453,939. (See 3,262,378.)

3,474,551, G. C. Pearson, MOBILE GRAVE EXCAVATOR; **3,577,664,** Sing and Sing, EXCAVATION MACHINE HAVING IMPROVED DIGGING ELEMENTS, **filed** Sept. 7, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2309, *Delta Diggers, Inc.* v. *Bryce Van Valkenburgh et al.*

3,487,221, L. M. Frank, LIGHT ACTIVATED TRIGGER FOR PHOTOGRAPHIC FLASH SYSTEM, **filed** Oct. 24, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2497–CC, *The Lase Co.* v. *Wein Products, Inc. and Stanley Weinberg.*

3,494,660. (See 3,368,843.)

3,502,083, Howard and Kaplan, BREAST PADS AND METHOD OF MAKING THE SAME, **filed** Sept. 19, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2212–FW, *United Cellular Products Corp.* v. *Moldex, Inc. and Herbert Magidson.*

3,528,820, Schwall, Rogers and Corbin, PROCESS OF PREPARING A SELF-BASTING POULTRY PRODUCT; **3,563,763,** same, SELF-BASTING POULTRY PRODUCTS, **filed** July 31, 1972, D.C., W.D. Va. (Harrisonburg), Doc. 72–C–38–H, *Armour and Company* v. *Swift & Company.*

3,535,974, J. B. Habig, DOOR FOR A PIANO CASE HAVING ARRANGEMENT FOR TONAL ESCAPEMENT, **filed** Sept. 5, 1973, D.C., N.D. Ind. (Fort Wayne), Doc. 73–F–71, *Kimball Piano & Organ Co.* v. *Currier Piano Company Inc. and Vilis Reinfeld Music House.*

3,538,725, Guenther and Barcik, HOOD LOCKING DEVICE, **filed** Oct. 29, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2760, *Chapman Performance Products* v. *Ramm Industries Co. et al.*

3,563,365, H. T. Loberg, ACCUMULATING CONVEYOR, **filed** Oct. 12, 1973, D.C., E.D. Ark. (Jonesboro), Doc. J–73–C-70, *Roach Manufacturing Company* v. *Henry Thomas Loberg and Hytrol Conveyor Co., Inc.*

3,563,763. (See 3,528,820.)

3,575,678, W. F. Barton, REED SWITCH ASSEMBLY, **filed** Oct. 10, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2472, *Grigsby Barton, Inc.* v. *C. P. Clare & Company et al.* Order, stipulations of dismissal of complaint and counterclaim without prejudice, Sept. 20, 1973.

3,576,661. (See 2,911,729.)

3,577,664. (See 3,474,551.)

3,611,444, C. T. Rector, DETACHABLE POCKET FOR WEARING APPAREL; **3,643,264,** same, UNDERWATER DIVING GARMENT CONSTRUCTION, **filed** Sept. 10, 1973, D.C., W.D. Wash. (Seattle), Doc. 545–73C2, *Carl T. Rector* v. *Imperial Manufacturing Company and James E. Hill.*

3,613,812, E. E. Hetteen, SHOCK MOUNTED SKIS FOR SNOWMOBILE, **filed** Sept. 14, 1973, D.C. Minn. (St. Paul), Doc. 6–73–269, *Sno Jet Ltd. and Conroy, Inc.* v. *Arctic Enterprises, Inc.*

3,640,304, Fox and Parry, INSERTABLE VALVE ASSEMBLY, **filed** May 10, 1973, D.C. Oreg. (Portland), Doc. C–73–372, *Marco Dental Products, Incorporated* v. *Mark W. Whitman and Kathleen F. Whitman, doing business as Beaver State Dental.* Patent valid and has been infringed by defendants, May 16, 1973.

3,643,264. (See 3,611,444.)

3,696,898, G. M. Sommer, CLUTCH-BRAKE UNIT, **filed** Sept. 17, 1973, D.C., S.D. Ohio (Cincinnati), Doc. 8951, *G. M. Sommer Co., Inc.* v. *Force Control Industries, Inc.*

3,725,158, Messerschmidt, Jr., Heyman and Johnsen II, MULTI-COMPONENT POWDERLESS ETCHING BATH ADDITIVE; **3,725,159,** same, POWDERLESS ETCHING BATH COMPOSITIONS, **filed** Apr. 16, 1973, D.C. Del. (Wilmington), Doc. 4628, *Mona Industries, Inc.* v. *Philip A. Hunt Chemical Corporation.* Case transferred to U.S. District Court for the District of New Jersey at Newark, Nov. 2, 1973.

3,725,159. (See 3,725,158.)

3,729,034, Farrell and Balfanz, VALVE AND SEAL MEANS, **filed** Nov. 2, 1973, D.C. Ariz. (Phoenix), Doc. C–73–681 CAM, *Select Systems, Inc.* v. *Diverse Ventures Corporation, Vernon E. Leas, Jeffrey A. Leas and Thomas Balfanz.*

3,736,197, R. G. Russell, METHOD AND APPARATUS FOR MANUFACTURING CONTINUOUS FILAMENTS, **filed** May 29, 1973, D.C.N.J. (Newark), Doc. C–752–73, *Philip A. Hunt Chemical Corporation* v. *Mona Industries, Inc.*

3,934,485. (See 2,918,420.)

Re. 25,614, L. A. Turzillo, MEANS OF GROUTING AND CONCRETING, **filed** Sept. 7, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–949, *Lee A. Turzillo et al.* v. *Intrusion Prepakt, Inc. et al.*

Re. 25,942, E. N. Reynolds, SPRINKLER HEAD, **filed** Sept. 21, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2231–DWW, *Elmer N. Reynolds and Rain-O-Mat Sprinklers, Inc.* v. *Zurn Industries, Inc., doing business as Hays Mfg.*

Re. 26,056, W. P. Hickman, COMBINATION WATER DAM AND GRAVEL STOP, **filed** Oct. 10, 1972, D.C., E.D. Mich. (Detroit), Doc. 39009, *W. P. Hickman Co., Inc.* v. *Pomar Bldg. Products (Inc.).* Consent judgment, plaintiff's patent valid and infringed by defendant, defendant's counterclaim dismissed with prejudice, Oct. 9, 1973.

Re. 27,615. (See 3,427,997.)

D. 197,841, J. E. Cornish, INFANT'S RIDING TOY, **filed** Oct. 24, 1973, D.C.N.J. (Trenton), Doc. 1532–73, *Judson E. Cornish* v. *Frank Caplan.*

Reg. No. 673,493. (See 2,918,420.)

Certificates of Correction for the Week of Apr. 16, 1974

D. 228,510	3,705,190	3,755,316	3,764,589	3,770,349	3,773,689	3,776,632	3,778,693
D. 228,511	3,706,579	3,755,384	3,764,616	3,770,397	3,773,787	3,776,674	3,778,770
D. 228,911	3,708,513	3,755,363	3,764,785	3,770,602	3,773,794	3,776,689	3,778,831
D. 229,092	3,709,893	3,755,681	3,764,939	3,770,604	3,773,811	3,776,698	3,778,843
D. 229,322	3,716,405	3,755,763	3,764,962	3,770,637	3,773,872	3,776,708	3,778,913
Re. 27,759	3,720,315	3,756,526	3,765,330	3,770,699	3,773,873	3,776,715	3,778,917
Re. 27,764	3,720,466	3,756,942	3,765,445	3,770,726	3,773,884	3,776,743	3,778,920
Re. 27,798	3,723,440	3,757,547	3,765,938	3,770,743	3,773,908	3,776,802	3,778,958
3,225,241	3,723,707	3,757,563	3,766,007	3,770,820	3,774,010	3,776,846	3,779,824
3,523,958	3,723,795	3,757,651	3,766,306	3,770,876	3,774,033	3,776,860	3,779,885
3,564,434	3,725,376	3,758,178	3,766,368	3,770,914	3,774,128	3,776,873	3,779,941
3,566,134	3,727,949	3,758,410	3,766,543	3,770,982	3,774,318	3,776,935	3,779,972
3,588,766	3,732,267	3,758,590	3,766,557	3,771,080	3,774,326	3,776,971	3,779,979
3,600,969	3,733,121	3,758,643	3,776,559	3,771,580	3,774,500	3,777,009	3,780,171
3,610,552	3,735,498	3,758,724	3,767,155	3,771,669	3,774,649	3,777,048	3,780,363
3,613,290	3,736,825	3,759,499	3,767,273	3,771,821	3,774,653	3,777,125	3,780,437
3,614,702	3,738,032	3,759,799	3,767,341	3,771,833	3,774,783	3,777,180	3,780,510
3,622,588	3,738,201	3,759,895	3,767,419	3,771,876	3,774,821	3,777,207	3,781,263
3,624,133	3,738,490	3,759,915	3,767,713	3,771,992	3,775,121	3,777,242	3,781,874
3,639,320	3,738,980	3,760,127	3,767,766	3,772,000	3,775,130	3,777,247	3,781,900
3,644,386	3,739,482	3,760,129	3,767,780	3,772,064	3,775,380	3,777,265	3,782,372
3,644,616	3,739,794	3,760,184	3,767,829	3,772,066	3,775,454	3,777,275	3,782,425
3,644,632	3,740,466	3,760,281	3,767,909	3,772,236	3,775,501	3,777,328	3,782,535
3,645,206	3,740,665	3,760,390	3,767,919	3,772,351	3,775,523	3,777,499	3,782,883
3,646,362	3,743,978	3,761,059	3,767,924	3,772,422	3,775,534	3,777,528	3,782,884
3,649,194	3,745,116	3,761,213	3,767,953	3,772,426	3,775,542	3,777,563	3,782,902
3,655,655	3,745,144	3,761,299	3,767,968	3,772,523	3,775,686	3,777,609	3,782,973
3,662,018	3,745,200	3,761,356	3,768,225	3,772,680	3,775,710	3,777,657	3,783,074
3,664,158	3,745,373	3,761,377	3,768,426	3,772,771	3,775,795	3,777,722	3,783,287
3,668,131	3,746,794	3,761,427	3,768,480	3,772,847	3,775,824	3,777,810	3,783,333
3,668,228	3,746,808	3,761,611	3,768,738	3,772,913	3,775,951	3,777,826	3,783,434
3,669,725	3,746,967	3,761,964	3,768,762	3,772,917	3,775,990	3,777,892	3,783,525
3,671,611	3,747,620	3,762,245	3,768,775	3,773,034	3,776,003	3,778,083	3,783,631
3,671,776	3,747,941	3,762,515	3,768,803	3,773,058	3,776,135	3,778,087	3,783,862
3,676,200	3,748,170	3,762,855	3,768,963	3,773,143	3,776,150	3,778,100	3,784,403
3,676,494	3,748,309	3,762,897	3,769,143	3,773,165	3,776,156	3,778,107	3,785,016
3,684,792	3,750,007	3,763,374	3,769,202	3,773,203	3,776,180	3,778,181	3,785,385
3,690,940	3,751,417	3,763,406	3,769,337	3,773,282	3,776,212	3,778,206	3,785,694
3,693,370	3,751,534	3,763,433	3,769,410	3,773,317	3,776,228	3,778,234	3,785,780
3,694,417	3,751,917	3,763,520	3,769,512	3,773,364	3,776,233	3,778,284	3,785,786
3,695,002	3,752,915	3,763,534	3,769,554	3,773,480	3,776,420	3,778,288	
3,696,951	3,753,082	3,763,974	3,769,662	3,773,485	3,776,427	3,778,372	
3,699,042	3,754,238	3,764,201	3,769,696	3,773,549	3,776,433	3,778,381	
3,700,700	3,754,812	3,764,208	3,769,785	3,773,583	3,776,499	3,778,395	
3,701,023	3,754,897	3,764,249	3,770,128	3,773,657	3,776,583	3,778,678	
3,704,358	3,755,286	3,764,453	3,770,215	3,773,666	3,776,621	3,778,682	

Dedication

3,694,132.—*William S. Bunte,* Somerville, and *Lino E. De Gasperis,* Clinton, N.J. EXTRUSION DIE DECKLE MEANS. Patent dated Sept. 26, 1972. Dedication filed Jan. 14, 1974, by the assignee, *Egan Machinery Company.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

3,681,088.—*Ira Katz,* Elberon, and *Richard A. Wilson* and *Christopher Giacino,* Monmouth Beach, N.J. NOVEL FLAVORING COMPOSITIONS UTILIZING THIAZO DERIVATIVES. Patent dated Aug. 1, 1972. Disclaimer and dedication filed Dec. 10, 1973, by the assignee, *International Flavors & Fragrances Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Disclaimers

3,285,963.—*Gordon Alan Hughes* and *Herchel Smith,* Wayne, Pa. 2 - POLYCARBONALKYL-1,3-CYCLOPENTANEDIONES. Patent dated Nov. 15, 1966. Disclaimer filed Jan. 7, 1974, by the assignee, *Herchel Smith.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,462,045.—*Isral J. Markowitz,* Brooklyn, N.Y. SAFETY AEROSOL COVER CAP. Patent dated Aug. 19, 1969. Disclaimer filed Jan. 17, 1974, by the assignee, *Stem Development Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 1, 1985.

3,559,307.—*Euval S. Barrekette,* New York, and *Herbert B Baskin,* Mohegan Lake, N.Y. STYLUS ACTUATED GAS DISCHARGE SYSTEM. Patent dated Feb. 2, 1971. Disclaimer filed Dec. 17, 1973, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1–9, inclusive, of said patent.

3,571,976.—*Kurt Schmid,* Steyr, Austria. DOOR AND WINDOW ARRANGEMENT. Patent dated Mar. 23, 1971. Disclaimer filed Jan. 14, 1974, by the assignee, *Alcan Aluminiumwerke GmbH.*

Hereby enters this disclaimer to claims 1 to 13, inclusive, of said patent.

3,612,136.—*Vernon E. Gough,* Croyde, near Braunton, North Devon, England. PNEUMATIC TIRES. Patent dated Oct. 12, 1971. Disclaimer filed Jan. 4, 1974, by the assignee, *Dunlop Holdings, Ltd.*

Hereby enters this disclaimer to claim 4 of said patent.

3,612,202.—*Harry C. Moon, Jr.*, Oglesby, and *John W. Pinkerton*, La Salle, Ill. HYDROSTATIC WHEEL ASSIST. Patent dated Oct. 12, 1971. Disclaimer filed Dec. 13, 1973, by the assignee, *Sundstrand Corporation*.

Hereby enters this disclaimer to claims 1–5, inclusive, of said patent.

3,625,013.—*Charles L. Guild*, Barrington, R.I., and *Willard B. Goodman*, Newport, Oreg. EXPANSIBLE MANDRELS FOR USE IN DRIVING OR WITHDRAWING TUBULAR PILES. Patent dated Dec. 7, 1971. Disclaimer filed Jan. 7, 1974, by the inventors.

Hereby enter this disclaimer to claim 1 of said patent.

3,638,488.—*Robert S. Meijer*, Chicago, Ill. FLUID VELOCITY MEASURING DEVICE AND METHOD. Patent dated Feb. 1, 1972. Disclaimer filed Jan. 7, 1974, by the assignee, *Alnor Instrument Co.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,709,269.—*Peter J. Cervenak*, Seattle, Wash. LOG BARKER RING POSITION CONTROLLER. Patent dated Jan. 9, 1973. Disclaimer filed Dec. 26, 1973, by the assignee, *Nicholson Manufacturing Company*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,710,176.—*Kurt Schlesinger*, Fayetteville, N.Y. ELECTRON-OPTICAL RECORDING DEVICE. Patent dated Jan. 9, 1973. Disclaimer filed, Jan. 14, 1974, by the assignee, *General Electric Company*.

Hereby disclaims the remaining term of said patent.

3,712,802.—*Roland S. Grybek* and *Frederick B. Johnston*, Tampa, Fla. COMPOSITION AND METHOD FOR TREATING PLANTS AND TREES. Patent dated Jan. 23, 1973. Disclaimer filed Mar. 18, 1974, by the assignee, *Marketing and Research Services, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 27, 1988.

3,712,803.—*Roland S. Grybek* and *Frederick B. Johnston*, Tampa, Fla. COMPOSITION AND METHOD FOR TREATING PLANTS AND TREES. Patent dated Jan. 23, 1973. Disclaimer filed Mar. 18, 1974, by the assignee, *Marketing and Research Services, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 27, 1988.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 30, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-30-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-05-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-24-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-01-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—B. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-02-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-22-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-06-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing: Indicating.	12-22-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-27-73
DESIGNS, GROUP 290—C D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-17-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-08-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	5-02-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—Director (Vacant). Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	5-07-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	6-15-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—Director (Vacant). Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-08-73

Expiration of patents: The patents within the range of numbers indicated below expire during April 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,787,000 to 2,790,970, inclusive
Plant Patents..... Numbers 1,586 to 1,597, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 16, 1974

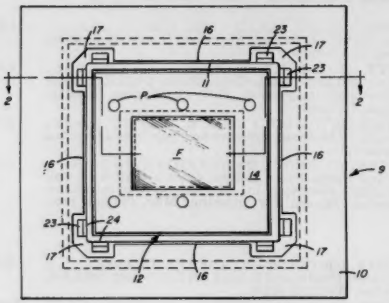
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T921,012
SLIDE ADAPTER

Vernon H. Jungjohann, 901 Elmgrove Road, Rochester, N.Y. 14650

Filed Jan. 31, 1972, Ser. No. 221,947
Int. Cl. G03b *21/00*; G09f *1/10*
U.S. Cl. 353—120
1 Sheet Drawing. 10 Pages Specification



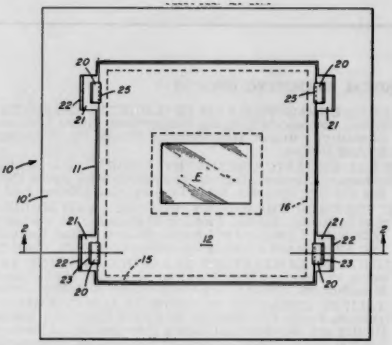
A slide adapter for interchangeably receiving relatively small transparency mounts and adapting them for use in a slide projector designed to accommodate larger transparency mounts. This adapter comprises a windowed frame member having overall dimensions comparable to the larger transparency mounts and having a recess in one face thereof into which the smaller transparency mount can be inserted flatwise and be frictionally retained by eight flexible fingers which engage the four edges of the relatively small transparency mount when seated in said recess.

T921,013
SLIDE ADAPTER

Archie J. Tucker, 1669 Lake Ave., Rochester, N.Y. 14650

Filed Jan. 31, 1972, Ser. No. 221,948
Int. Cl. G03b *21/00*; G09f *1/10*
U.S. Cl. 353—120
1 Sheet Drawing. 8 Pages Specification

A slide adapter for interchangeably receiving relatively small transparency mounts and adapting them for use in a slide projector designed to accommodate larger transparency mounts. This adapter comprises a windowed frame member having overall dimensions comparable to the larger transparency mounts and having a recess in one face thereof into which the smaller transparency mount can be inserted flatwise. The smaller transparency mount is held in this recess by a plurality of flexible fingers the free ends of which overhang the outer face of

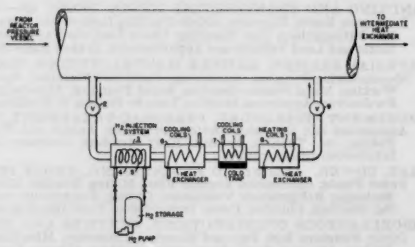


the relatively small transparency mount when it is properly seated in the recess of the adapter.

T921,014
METHOD FOR REMOVING FISSION PRODUCTS FROM A NUCLEAR REACTOR COOLANT

Richard P. Colburn, Youngwood, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 9, 1972, Ser. No. 261,476
Int. Cl. G21c *19/20, 19/32*
U.S. Cl. 176—37
1 Sheet Drawing. 13 Pages Specification

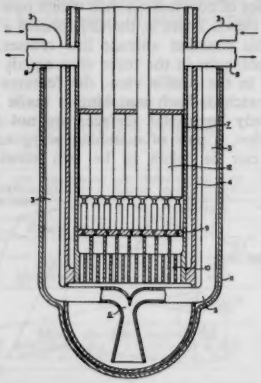


A method for removing cesium 137, iodine 131 and tritium from a liquid sodium reactor coolant. Hydrogen is introduced into the liquid sodium causing sodium hydride to precipitate in a cold trap. The cesium iodine and tritium isotopes are removed from the liquid sodium by coprecipitating as impurities in the sodium hydride.

T921,015
NUCLEAR REACTOR CORE COOLING ARRANGEMENT

Arnold H. Redding, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1972, Ser. No. 288,610
Int. Cl. G21c *15/18, 15/24*
U.S. Cl. 176—38
5 Sheets Drawing. 15 Pages Specification

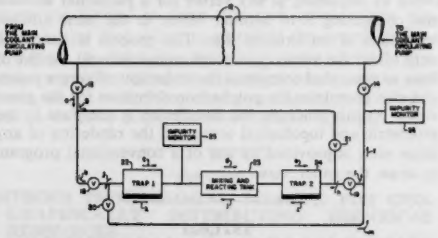


A core cooling system for a nuclear reactor having a plurality of primary fluid flow systems. The reactor coolant flow from the primary systems is joined upon entering the pressure vessel. Jointure is accomplished in a common chamber causing high coolant flow velocities at low static pressures. If a pipe ruptures in one of the primary fluid flow systems, the low pressure in the common chamber minimizes leakage from the intact flow systems. This allows continuation of coolant flow through the nuclear core for a sufficient length of time to effectively eliminate the possibility of thermal damage.

T921,016
REMOVAL OF RADIOACTIVE CONTAMINATION FROM A NUCLEAR REACTOR COOLANT

Martin H. Cooper, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 28, 1972, Ser. No. 293,238
Int. Cl. G21c *19/32*
U.S. Cl. 176—37
2 Sheets Drawing. 14 Pages Specification

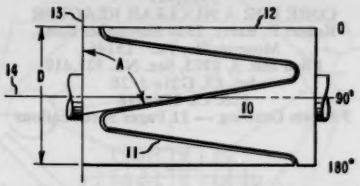


A system for removing radioactive fission products from a liquid metal reactor coolant. Isotopic diluents and reacting compounds are added to hot liquid sodium. The reactants isotopically exchange or chemically react with the fission products and are precipitated out of solution in a first cold trap. When the supply of reactants is exhausted, the flow is reversed; the first trap then functions to supply the reactants and the precipitation occurs in a second cold trap. The process operates continuously and reversibly.

T921,017
APPARATUS

Darryl Edward Helton, 50 Anglin Drive, Robscott Manor, Newark, Del. 19711

Filed Nov. 6, 1972, Ser. No. 303,827
Int. Cl. B65h *54/28*
U.S. Cl. 242—43
1 Sheet Drawing. 6 Pages Specification

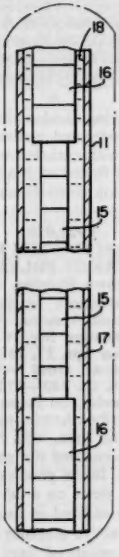


A barrel cam for use in a yarn winding apparatus is provided with a generally helical continuous groove in its surface. The helical portion of the groove being disposed at an angle in the range of from about 58 degrees to about 78 degrees with respect to a plane perpendicular to the longitudinal axis of the barrel cam. The cam groove is machined and its surface finished by conventional techniques to a surface finish of from about 25 to about 40 microinches having somewhat of an orange peel appearance.

T921,018
NUCLEAR REACTOR CORE AND FUEL ELEMENT THEREFOR

Malcolm W. Dyos, Laughlintown, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

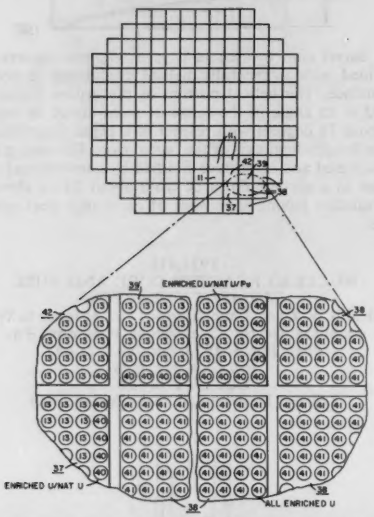
Filed Jan. 5, 1973, Ser. No. 321,407
Int. Cl. G21c *3/28*
U.S. Cl. 176—18
2 Sheets Drawing. 15 Pages Specification



A reactor core including a plurality of metallic clad fuel elements which increase the volume fraction of fuel in the core. The amount of fuel within the cladding along the length of at least some of the fuel elements is matched to the neutron radiation to which the fuel element is exposed. In one example, two different diameters of fuel pellets are used with cladding having a constant inside

diameter. The fuel pellet diameter is larger in the upper and lower regions of the core as compared to the fuel pellet diameter in the center region of the core. A layer of liquid metal serves as a bond between the varying outer diameter of fuel pellets and the constant inner diameter of the cladding.

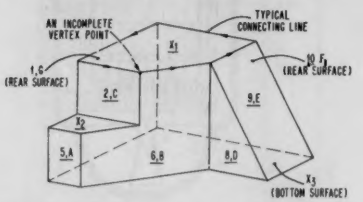
T921,019
CORE FOR A NUCLEAR REACTOR
Robert F. Barry, 2524 Haymaker Road, Monroeville, Pa. 15146
Filed Jan. 5, 1973, Ser. No. 321,410
Int. Cl. G21c *3/28*
U.S. Cl. 176—18
3 Sheets Drawing — 11 Pages Specifications



A reactor core having tandem arranged fuel regions for use in a water moderated nuclear reactor. An upper core region is fueled with enriched uranium oxide; while, a lower core region is fueled with a plutonium oxide. An intermediate core region contains natural uranium oxide.

T921,020
PROCESS FOR ENABLING THE INTERPRETATION OF VIEWS OF POLYHEDRA
Arthur Appel, Yorktown Heights, and Arthur J. Stein, Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 214,194, Dec. 30, 1971. This application Apr. 27, 1973, Ser. No. 355,122
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5
21 Sheets Drawing. 50 Pages Specification

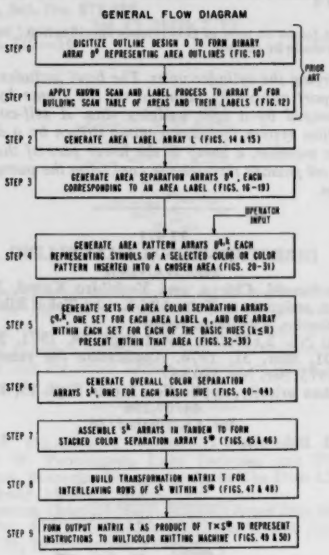
In the process described herein, there are analyzed two orthographic views and then, with the data generated in such analysis there is enabled the generation of the third view of a polyhedron. In the process there are first drawn the front and profile views on a device such as a capacitance tablet which is utilized in association with a computer controlled interactive graphics device. The views are drawn such that end points of lines are clearly recorded, the front and profile views being termed given views. There is now formed in a temporary storage area a list of the vertex points corresponding to the vertex points in the two given views. In addition, there is formed in a temporary storage area, a list of lines connecting the vertex points; i.e., a topological map. The list of stored lines is analyzed to find sets of lines which form closed loops, the latter closed loops defining polygons which are views of respective surfaces on the polyhedron. In addition, there are also taken as polygon lines, those which have vertical components. These lines can be flat surfaces which are seen in edge view in the given views; i.e., in the profile or front views. At this point there is now present in storage a derived point list, line list and a polygon list. In the polygon list, the polygons are now sorted in order of decreasing altitude. To effect this sort, there are found the lines of constant altitude which pass across both of the given views. There is, thereby formed a list of polygons that this constant altitude line crosses. When the number of polygons in the front view equals the number of polygons in the profile view, the features can be immediately matched. Such matching is made for all altitudes and only horizontal surfaces are not detected. In this connection, a pair of matching polygons, one from each view can be taken to be two views of a surface in space and the coordinates of the vertex points are thereby determined and the connection of points are composed. When the given views do not consist of an equal number of features or when a constant altitude line crosses an unequal number of features in the given views, this signifies that a line has been drawn that is not the edge view of a flat surface. The latter type lines are suitably deleted. After the features in two given views are properly associated and all three-dimensional surfaces that do not appear as areas in the given views are found, there are now found the horizontal surfaces. To effect the latter step, there are found the vertex points that are not completely defined, a defined vertex point being the junction of three or more flat surfaces, the vertex point being taken to be the vertex of a cone in space for all the sides of the cone (excluding the base) are completely defined. An incompletely defined vertex point belongs to a line which has not been found to lie on the boundary of at least two surfaces. The incompletely defined vertex points are placed in a list of decreasing altitude. This list is initiated by beginning at any vertex for a particular altitude and connecting it to another vertex at the same altitude by means of an existing line. The process is continued until all of the vertex points are connected and the list of lines so generated completes the definition of vertex points and also completes the polyhedron definition for the given views. At this juncture, the description is complete in the geometric and topological sense and the rendering of any other view is provided by use of a conventional program to draw the other view.



T921,021
PROCESSING OF DATA FROM MULTICOLOR OR OTHER MULTISYMBOL DESIGNS
Nitta P. Dooner, Janice Richmond Lourie, and Lin S. Woo, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 209,955, Dec. 20, 1971. This application Aug. 9, 1973, Ser. No. 387,073
Int. Cl. G06f *9/12*
U.S. Cl. 444—1
26 Sheets Drawing. 47 Pages Specification

A computer-aided method of developing a digitized multicolor design, including representations of arbitrary

multicolor patterns inserted into arbitrarily defined areas of the design, and separating the color information in a color-by-color, row-by-row fashion to provide operating instructions for enabling a multicolor knitting machine to produce the design in fabric. The principal steps are shown in the general flow diagram. Steps 0 and 1 are known (U.S. Pats. Nos. 3,529,298 and 3,644,935). In step 2 an array of area label numbers is generated. In step 3 separate binary arrays are generated to represent the respective labeled areas. In step 4 arrays are generated to represent the selected color patterns in chosen areas. Color patterns may comprise solid or mixed colors. In step 5 binary arrays are generated to represent design elements separated by area and by color. In step 6 binary arrays are formed to show, for each color, where elements having that color are placed in the overall design. In steps 7, 8 and 9 the overall color separation arrays are arranged first in tandem, then are interleaved to represent binary instructions for operating the knitting needles in color-by-color, course-by-course fashion.

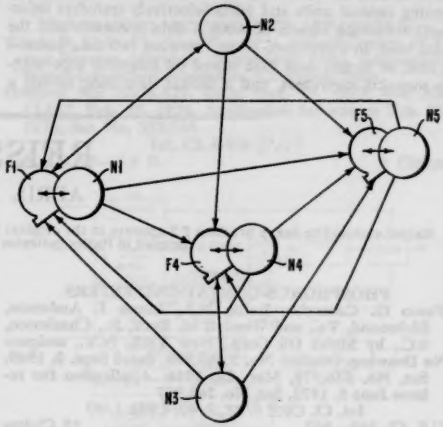

GENERAL FLOW DIAGRAM
STEP 0
DIGITIZE OUTLINE DESIGN D TO FORM BINARY ARRAY B^0 REPRESENTING AREA OUTLINES (FIG. 10)
PRIOR ART
STEP 1
APPLY KNOWN SCAN AND LABEL PROCESS TO ARRAY B^0 FOR BUILDING SCAN TABLE OF AREAS AND THEIR LABELS (FIG. 12)
STEP 2
GENERATE AREA LABEL ARRAY L (FIGS. 14 & 15)
STEP 3
GENERATE AREA SEPARATION ARRAYS B^{L_1}, EACH CORRESPONDING TO AN AREA LABEL (FIGS. 16-19)
OPERATOR INPUT
STEP 4
GENERATE AREA PATTERN ARRAYS B^{L_1} EACH REPRESENTING SYMBOLS OF A SELECTED COLOR OR COLOR PATTERN INSERTED INTO A CHOSEN AREA (FIGS. 20-31)
STEP 5
GENERATE SETS OF AREA COLOR SEPARATION ARRAYS $C^{q,k}$, ONE SET FOR EACH AREA LABEL q, AND ONE ARRAY WITHIN EACH SET FOR EACH OF THE BASIC HUES ($k \leq 8$) PRESENT WITHIN THAT AREA (FIGS. 32-39)
STEP 6
GENERATE OVERALL COLOR SEPARATION ARRAYS S^k, ONE FOR EACH BASIC HUE (FIGS. 40-44)
STEP 7
ASSEMBLE S^k ARRAYS IN TANDEM TO FORM STACKED COLOR SEPARATION ARRAY S^* (FIGS. 45 & 46)
STEP 8
BUILD TRANSFORMATION MATRIX T FOR INTERLEAVING ROWS OF S^k WITHIN S^* (FIGS. 47 & 48)
STEP 9
FORM OUTPUT MATRIX A AS PRODUCT OF $T \times S^*$ TO REPRESENT INSTRUCTIONS TO MULTICOLOR KNITTING MACHINE (FIGS. 49 & 50)

T921,022
INTEGER PROGRAMMING METHOD FOR GEOGRAPHICALLY DISTRIBUTING IDENTICAL RESOURCES

Richard George Casey, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 292,007, Sept. 25, 1972. This application Aug. 17, 1973, Ser. No. 389,395
Int. Cl. G06f *9/12*
U.S. Cl. 444—1
4 Sheets Drawing. 33 Pages Specification

A method for controlling a programmable digital computer to optimize the geographical distribution of identical resources with respect to a plurality of geographically separated users given the costs associated with storing said resource when located at each possible location and

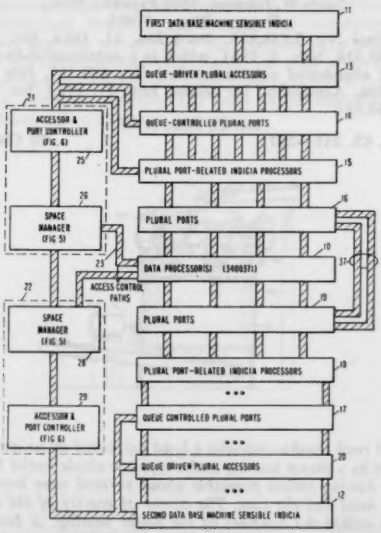


the costs associated with each user communicating with each possible location.

T921,023
INFORMATION AND STORAGE RETRIEVAL SYSTEMS

William L. Carter, Longmont, and John J. Rhinehart and Henry J. Zentgraf, Boulder County, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,371
Int. Cl. G06f *15/40, 13/00, 7/22*
U.S. Cl. 340—172.5
8 Sheets Drawing. 102 Pages Specification


FIRST DATA BASE MACHINE SENSIBLE INDICIA
QUEUE-DRIVEN PLURAL ACCESSORS
ACCESSOR & PORT CONTROLLER (FIG. 6)
QUEUE-CONTROLLED PLURAL PORTS
PLURAL PORT-RELATED INDICIA PROCESSORS
SPACE MANAGER (FIG. 5)
PLURAL PORTS
DATA PROCESSOR(S) (S/360/370)
ACCESS CONTROL PATHS
SPACE MANAGER (FIG. 5)
PLURAL PORTS
PLURAL PORT-RELATED INDICIA PROCESSORS
ACCESSOR & PORT CONTROLLER (FIG. 6)
QUEUE CONTROLLED PLURAL PORTS
QUEUE DRIVEN PLURAL ACCESSORS
SECOND DATA BASE MACHINE SENSIBLE INDICIA

In an information storage and retrieval system, a data base in machine-sensible indicia (tape cartridges at **11**, disks at **12**) is accessed by queue-driven plural accessors

(cartridge transport or disk arms) which, in turn, communicate with queue-controlled plural ports (tape transport or disk file recording circuits). A plurality of intervening control units and ports selectively transfers information-bearing signals between a data processor and the data base. In a preferred form, there are two data bases—a first, or larger, data base stored on magnetic tape within movable cartridges, and a second data base having a shorter access time and preferably on a plurality of disk files each preferably having queue-driven plural accessors. Data can be transferred from either data base to the data processor or between the data bases. Accessor control using queuing techniques maximizes cartridge throughput for enhancing information storage and retrieval operations by minimizing accessor motions in a critical manner.

REISSUES

APRIL 16, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,969
PHOSPHORUS-CONTAINING ESTERS

Vasco G. Camacho, Iselin, N.J., James J. Anderson, Richmond, Va., and Wendell M. Byrd, Jr., Charleston, S.C., by Mobil Oil Corp., New York, N.Y., assignee

No Drawing. Original No. 3,465,068, dated Sept. 2, 1969, Ser. No. 536,978, Mar. 24, 1966. Application for reissue June 8, 1972, Ser. No. 260,957

Int. Cl. C07f *9/08, 9/40*; C08k *1/60*

U.S. Cl. 260—952 **18 Claims**

Phosphorus-containing compounds which are useful in the preparation of polyurethanes and which are derived from (1) phosphorus compounds containing at least one active function, (2) alkylene oxides or epihalohydrin and (3) dicarboxylic acid anhydrides are provided. Among the compounds are those prepared by reacting a dicarboxylic acid anhydride with a phosphorus acid which has been partially or completely reacted with an alkylene oxide or epihalohydrin, followed by reaction of the carboxyl group thus formed with additional alkylene oxide or epihalohydrin. Methods for preparation of the compounds are also provided.

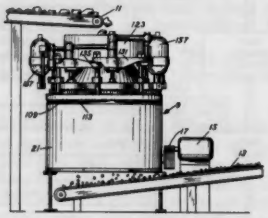
27,970
ROCK CRUSHER

Louis W. Johnson, 3440 Franklin Blvd., Eugene, Oreg. 97403

Original No. 3,118,623, dated Jan. 21, 1964, Ser. No. 150,616, Nov. 2, 1961, which is a continuation-in-part of abandoned application Ser. No. 600,791, July 30, 1956. Application for reissue June 11, 1973, Ser. No. 368,594

Int. Cl. B02c *2/06*

U.S. Cl. 241—207 **20 Claims**



A rock crusher includes a head supported on an annular cam by a thrust bearing and a separate single radial bearing having rollers rotatable about vertical axes between the head and the cam. The center of gravity of the head lies within the confines of the roller bearing. A bowl is secured to a frame by a releasable holddown structure including a plurality of cylinders which permit the bowl to tilt upwardly to pass noncrushable material. The holddown structure includes support beams forming a ring and carrying the cylinder units. The bowl includes a bonnet support adjustably mounted on the frame by shims and clamped by a split wedging ring. A self-contained lubrication system includes a pump driven by a drive of the cam member, a sump in the lower part of the frame and an oil passage through the cam from the pump to the bearings.

27,971
DIRECTION-SIGNAL-CANCELLING MECHANISM

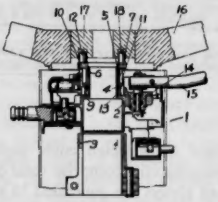
Masaru Suzuki, Chiryu, and Yoshihiro Kawai, Nagoya, Japan, assignors to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Original No. 3,609,264, dated Sept. 28, 1971, Ser. No. 24,101, Mar. 31, 1970. Application for reissue July 19, 1973, Ser. No. 380,987

Claims priority, application Japan, Sept. 13, 1969, 44/87,296

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.34 **3 Claims**



A direction-signal-cancelling mechanism which is releasably assembled into the direction-signal indicating apparatus of a vehicle comprises an axially projecting tubular column integral with the base of said indicating apparatus and having a bore diameter sufficient for a steering shaft to extend therethrough, an annular cam member having a bore diameter also sufficient for the steering shaft to extend therethrough and provided at its periphery with at least one axially extending lobe and at its upper end with at least one axially extending pin which is integral with said cam member and engageable in a counterbore provided in the steering wheel for interconnecting the cam member and the steering wheel when said wheel is rotated and said pin and counterbore come into alignment with each other, either one of said tubular column and said cam member being insertedly mounted on the other so as to permit said cam member to be axially slidable and rotatable and to permit said lobe to project radially outwardly to engage a latch means on the indicating apparatus to effect automatic cancelling of the vehicle's direction signals, a spring means compressed between a flange provided on the cam member

and the tubular column yieldably urging the cam member as a whole upwardly towards the steering wheel, and a flange provided on either one of said tubular column or said cam member limiting the extent of upward movement of said cam member.

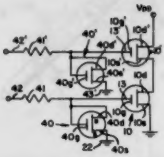
27,972
PROTECTIVE CIRCUIT FOR INSULATED GATE METAL OXIDE SEMICONDUCTOR FIELD-EFFECT DEVICE

Daniel R. Borror, Cupertino, and Donald E. Farina, Los Altos, Calif., assignors to General Instrument Corporation, Newark, N.J.

Original No. 3,395,290, dated July 30, 1968, Ser. No. 494,134, Oct. 8, 1965. Application for reissue Oct. 21, 1969, Ser. No. 871,485

Int. Cl. H02h 7/22

U.S. Cl. 317—16 **13 Claims**



A protective device connected to a line for limiting the voltage on the line to a safe operating range, which protective device comprises a field effect transistor one output terminal of which is connected to a reference potential and the gate and the other output terminal of which are connected to the line.

27,973
FILAMENT WINDING PROCESS

Donald W. Pennington, Lake Jackson, and Floyd E. Norton, Brazoria, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original No. 3,594,247, dated July 20, 1971, Ser. No. 679,194, Oct. 30, 1967. Application for reissue Aug. 28, 1972, Ser. No. 284,176

Int. Cl. B31c 3/00

U.S. Cl. 156—175 **8 Claims**

Filament reinforced plastic pipe is made by an improved process which minimizes the loss of reactive, volatile monomers from the thermosettable resin composition during the cure cycle. The process consists of gelling the resin by subjecting the resin-filament layer to a temperature sufficient to gell the resin within 5 minutes and then curing the resin at the normal curing temperature.

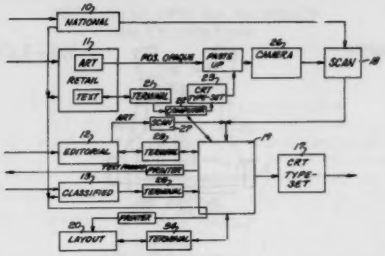
27,974
COMPOSING METHOD AND APPARATUS

Edwin R. Kolb, Chatham Township, Morris County, N.J., and Norman Morrison, Beachwood, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Original No. 3,626,824, dated Dec. 14, 1971, Ser. No. 13,069, Feb. 20, 1970. Application for reissue Feb. 20, 1973, Ser. No. 333,746

Int. Cl. B41b 27/18

U.S. Cl. 95—4.5 R **9 Claims**



Composing method and apparatus for publications such as newspapers in which copy from various sources is entered into a computer in coded form for use in controlling a phototypesetter to prepare a page copy. Certain copy including artwork which may be halftone or continuous tone is scanned to provide the numerical data necessary for controlling the phototypesetter while text material is first edited on an editing terminal and then stored with or without phototypesetting instructions in the computer. Each item to be included in the publication is identified by a heading and a layout department instructs the computer as to where the items are to appear. For this purpose the layout department has a layout terminal for displaying page areas with previously assigned sections outlined and identified and for entering coordinates of newly assigned sections into the computer. The terminal can display magnified portions of the page area. In reproducing continuous-tone copy, dot characters are stored in a character memory and used to provide different halftone screen sizes.

PATENTS

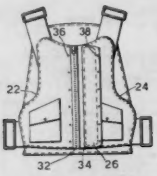
GRANTED APRIL 16, 1974

GENERAL AND MECHANICAL

3,803,639
BODY ARMOUR JACKET

William A. Cohen, 1556 N. Sierra Madre Villa, Pasadena, Calif.

Filed July 11, 1973, Ser. No. 378,207
Claims priority, application Israel, Oct. 4, 1972, 40502
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 7 Claims

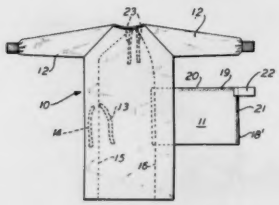


A body armour jacket, which may be easily donned and doffed and may be conveniently opened for purposes of comfort or ventilation, includes a front body assembly and a back body assembly, the front body assembly comprising a right armour section, a left armour section, and a center armour flap. The ends of the right and left armour sections are in abutting relationship and are fastened together by a fastener. The center armour flap is hinged to one of the sections along a line spaced from its abutting end and is fastenable by another fastener to the other section along a line spaced from its abutting end, such that the center armour flap, when closed, bridges the abutting ends of both sections.

3,803,640
SURGEON'S GOWN WITH CUMMERBUND

Richard E. Ericson, Nashua, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Apr. 19, 1973, Ser. No. 352,788
Int. Cl. A41b *9/00*
U.S. Cl. 2—114 9 Claims



A back-opening surgeon's gown having a water resistant panel attached to one vertical edge of the gown and adapted to wrap around the front of the user's body, covering the gown from chest level to just below the waist, the free end of the panel having a removable tab for use in positioning it, and suitable fastening means, such as an adhesive strip.

3,803,641
ENDOPROSTHESIS OF SHOULDER JOINT

Vladimir Julievich Golyakhovsky, ulitsa Krasnoarmeiskaya, 25, kv. 57, Moscow, U.S.S.R.

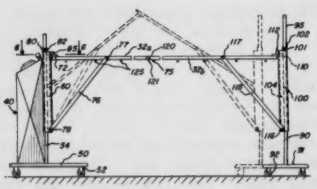
Filed Dec. 30, 1971, Ser. No. 214,295
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 7 Claims

An endoprosthesis of the shoulder joint, comprising a pin adapted to be fixed in the medullary channel of the humerus, provided at its end with a spheroidal head, and a shaped crown adapted to be fixed on the articular process of the scapula, and provided with a spherical socket for interaction with the head of the pin, to form an articulated joint, on passing the pin through the socket. Walls of the crown have edges split by recesses into segments which, when compressed, enable osseous tissue to be tightly embraced by the walls of the crown.

3,803,642
FOLDABLE BED BATH

Frank H. Erling, St. Paul, Minn.; Gordon E. Nelsen, and Clair A. Bearfield, both of Valley City, N. Dak., assignors to Julian S. Hoxeng, Moorhead, Minn.; Bertha J. McCarthy, Thousand Oaks and Carroll J. Cass, Los Angeles, both of, Calif.

Filed Sept. 22, 1971, Ser. No. 182,723
Int. Cl. A47k *3/06*
U.S. Cl. 4—177 16 Claims



A foldable bed bath used for bathing of bedridden patients which is comprised of a foldable frame structure which is foldable for storage and can be opened and positioned around the sides of a bed while the patient is retained in the bed. A water impervious sheet is connected to the frame to form the tub and the frame structure is unitary so that only the operation of folding and unfolding is required for set up and

removal of the same. The improved foldable bed bath includes a control cabinet with a temperature control and selector control valve by means of which the bed map be filled with water at a required temperature for safety and health of the bedridden patient and a vacuum pump by means of which the water is removed therefrom to insure safety of the patient in the bed bath.

3,803,643
CONVERTIBLE SLEEP LOUNGE

Roland A. Benoit, Danielson, Conn., assignor to InterRoyal Corporation, New York, N.Y.

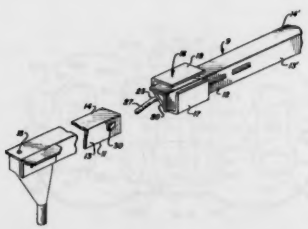
Filed May 17, 1972, Ser. No. 254,165
Int. Cl. A47c *17/14*
U.S. Cl. 5—18 **6 Claims**

A convertible sleep lounge comprises a stationary frame and a movable frame moving between forward and retracted positions with respect to the stationary frame. The stationary frame includes a pair of parallel channels which trap rollers attached to the movable frame enabling it to be easily moved between respective positions. A pair of spring members are attached at the rear of respective channels which maintain the rollers in the channels when the movable frame is in the retracted position and depress when a vertical load is placed on the seat of the sofa. The rollers, when this vertical load is applied, are moved into a blocking recess position preventing forward motion thereof.

3,803,644
ADJUSTABLE BED FRAME MEMBER

George M. Harris, Chicago, Ill., assignor to Harris-Hub Company, Inc., Harvey, Ill.

Filed Aug. 21, 1972, Ser. No. 282,412
Int. Cl. A47c *19/04*
U.S. Cl. 5—181 **5 Claims**

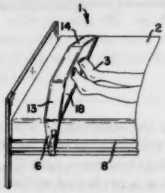


An improved adjustable cross frame member for use in a bed frame having side frame members and another such cross frame member. The cross frame member is comprised of a pair of elongate L-shaped elements having mutually perpendicular legs. One element is provided with a collar with tabs attaching to each of the legs of the elongate element and a bridge portion across the legs of the elements carried at each end by one of the tabs, as well as a plurality of longitudinally-spaced elongated slots. The other elongate element of the pair is provided with a finger and is inserted through the collar so that like legs of both elongate elements are in face-abutting engagement, and the finger engages one of the slots for initial selection of a bed width. The elongate elements are moved longitudinally with respect to each other to complete the width adjustment desired. The collar is provided with releasable clamping means, which includes a threaded bolt having a handle at its head end threaded through the bridge portion. The bolt is tightened against the inserted elongate element, clamping both elongate elements into positive frictional engagement with each other and locking them in the selected position of longitudinal adjustment.

3,803,645
INFLATABLE FOOT SUPPORT DEVICE

Maynard F. Oliverius, 2040 Sena Dr., Topeka, Kans.

Filed June 12, 1972, Ser. No. 262,129
Int. Cl. A47c *21/00*
U.S. Cl. 5—327 **3 Claims**

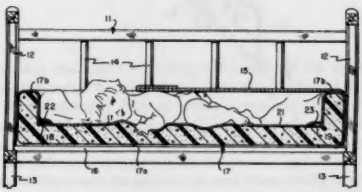


An inflatable foot support device for use on hospital beds and engageable by feet of a supine person in the hospital bed to substantially restrict internal and external rotation of the feet and to prevent toe and foot drop includes a plurality of walls joined together to form a closed and inflatable chamber having a valve in one of the chamber walls to permit communication of air into the chamber to inflate same and a pair of fastening members extending from the chamber and adapted to be removably secured to respective opposite sides of a hospital bed.

3,803,646
MATTRESS WITH INTEGRAL BUMPER

Vieno A. Newerowski, 109 Bayview Ter., Port Jefferson, N.Y.

Filed May 8, 1972, Ser. No. 251,438
Int. Cl. A47c *23/04, 27/08*
U.S. Cl. 5—345 R **3 Claims**

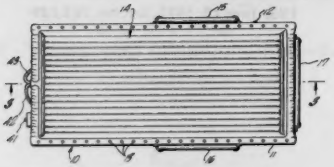


A mattress having particular application in conjunction with an infant's crib including a continuous peripheral bumper as an integral part of the mattress which provides greatly increased safety for the infant.

3,803,647
FLOTATION BED

James B. Reswick, Los Angeles, Calif., assignor to Attending Staff Association of Rancho Los Amigos Hospital, Downey, Calif.

Filed Aug. 20, 1971, Ser. No. 173,463
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB 6 Claims

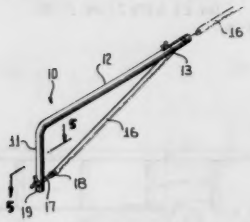


A flotation bed is disclosed which utilizes a supporting fluid held in a container and covered by a flexible, fluid-impervious layer. The supporting fluid has a specific gravity substantially greater than 1 and in a preferred embodiment has a specific gravity of about 2. An inflatable bladder may be located in the bottom of the container and inflation of this bladder results in a raising of the supporting fluid level.

3,803,648
VERSATILE CAMPING TOOL

Thomas C. King, III, 630 W. Maplehurst, Ferndale, Mich.

Filed Apr. 19, 1972, Ser. No. 245,502
Int. Cl. B25f *1/02*
U.S. Cl. 7—13 B 1 Claim

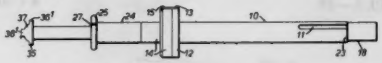


A versatile camping tool can be used as a saw, shovel, pick or snow anchor. The tool includes a tubular bent handle, a saw blade which is removably secured to opposite ends of the handle, and a shovel head adapted to be removably secured to either end of the handle. The saw blade can be stored inside the handle. The shovel head is adapted to be used with a handle made of bush timber found at the camp site.

3,803,649
DEVICES FOR MAKING WRAPPED-WIRE CONNECTIONS

Thomas Skutt, Liverpool, and Frank John Finn, Wallasey, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed May 1, 1972, Ser. No. 249,300
Claims priority, application Great Britain, May 21, 1971, 16458/71
Int. Cl. B25f *1/00*; B21f *3/00*
U.S. Cl. 7—14.1 R 5 Claims

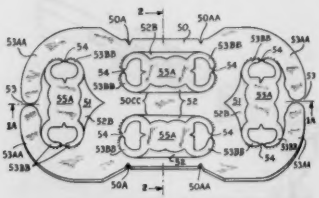


A wire-wrapping bit which enables an electrical wrapped-wire joint to be made upon a terminal tag by a sequence involving cutting, stripping and wrapping operations performed as a result of rotation of a spindle with respect to a stationary supporting sleeve comprises a spindle formed in two sections, the section of which that is adapted to be placed over a terminal tag, has at the pertinent end, a nose portion having two stripping slots in substantially diametrically opposed positions of its periphery. The other end of this section is arranged to interlock in either of two opposite angular positions with one end of the other spindle section to determine which of the two stripping slots is operatively positioned with respect to a slot in a wire guiding disc affixed to the second section of the spindle.

3,803,650
DEVICES AS SELECTIVE MASTER LINE-YARN HOLDER-CUTTER STORER IN COMBINATION MEANS

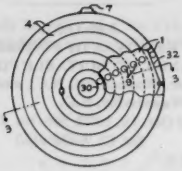
Paul M. D'Amico, 2709 S. 12th St., Philadelphia, Pa.

Filed June 14, 1971, Ser. No. 152,957
Int. Cl. B25f *1/00*
U.S. Cl. 7—14.1 R 2 Claims



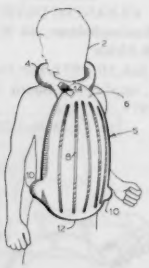
The invention relates to improvements and innovations in a device and accessories for bobbin-lacing, storing and paying out line-yarn and other incidentals such as; lacing cords in varying thicknesses, including fine wire in reel-like form; also, coactingly arresting accidental or unintended unwinding of said line-yarn within the grasp of open-throated cavities arcuately formed with claw-like arms, bifurcated as line-yarn feeler-sensers; wherein said master embodiment also coactingly provides a multitude of chambers for storing a plurality of varied or smaller similar embodiments.

3,803,651
TUBULAR BUOY
Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.
Continuation-in-part of Ser. No. 23789, March 30, 1970, which is a continuation-in-part of Ser. No. 531564, March 3, 1966, Pat. No. 3,503,825. This application Feb. 11, 1972, Ser. No. 225,386
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R **26 Claims**



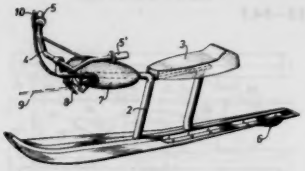
A life buoy, anchored buoy, or similar article of manufacture having at least one tube containing pressurized gaseous material within a strength-providing waterproof envelope, and preferably comprising foam plastic between the envelope and portions of the tube. When only one tube is used it optionally may be doughnut-shaped as in FIGS. 4 to 8 or helically wound as in FIG. 2. When the tubular means comprises two or more tubes they may be concentric as in FIG. 1. Optionally there may be fixed at the center of the tubular means a strength-providing cylinder, open-ended or closed at one or both ends, or a sealed compartment, or a sphere. The compartment optionally may contain survival materials (in a life buoy) or a wave motor, electric generator and battery (in an anchored buoy having an electric light, bell, horn or the like).

3,803,652
BODY MOUNTED SURFBOARD
Henry K. Uyehara, 2341 Coyne St., Honolulu, Hawaii
Filed Dec. 29, 1972, Ser. No. 319,893
Int. Cl. A63c *15/02*
U.S. Cl. 9—310 E **10 Claims**



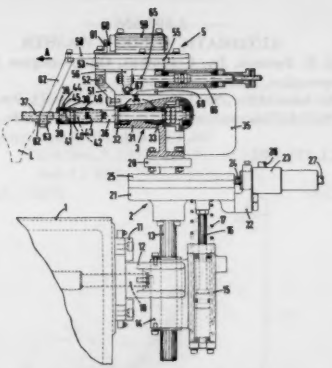
A board having a rigid body with a convex outer surface and a concave inner surface. The outer surface has ridges and grooves for directing movement and for maintaining directional stability. Rearward and inward curved semi-rigid members hold the surfboard on the frontal torso area of a wearer. Body encircling straps are used. A neck encircling member provides additional floatation at the neck area. The concave-convex surfboards with directional grooves are mounted directly on torso covering wet suits which provide the body encircling anchors.

3,803,653
PLANING WATERCRAFT
Per Olof Trostad, Taby, Sweden, assignor to Seasafe Transport AB, Stockholm, Sweden
Filed Feb. 10, 1972, Ser. No. 225,116
Claims priority, application Sweden, Feb. 19, 1971, 2188/71
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 C **7 Claims**



A planing watercraft adapted to be towed by a speed boat comprises at least one planing ski rigidly connected to an upright stand. A seat and a transverse steering bar are attached on the stand along with a releasable catch for selectively releasing a towing line.

3,803,654
LASTING MACHINE
Erich Gustav Henkel, Frankfurt am Main, and Bolko Jung, Gotzenhain, both of Germany, assignors to Messrs. E. G. Henkel Maschinenfabriken, Neu-Isenburg, Germany
Filed June 28, 1973, Ser. No. 374,661
Claims priority, application Germany, July 6, 1972, 2233331
Int. Cl. A43d *21/00*
U.S. Cl. 12—8.3 **15 Claims**



A lasting machine for pulling the leather of the upper and turning the rim of the upper over the insole of a shoe disposed on a firmly clamped last, in which a rotating worm extends transversely of the longitudinal direction of the last and rests on the rim of the upper, to draw the latter inwardly and urge it onto the adhesive coated insole. Hydraulic piston and cylinders move the worm longitudinally and transversely of the longitudinal direction of the last substantially parallel to the surface of the sole of the last, and a sensor is guided for movement with the worm and is adapted to sense the edge of the last and actuates a control valve for controlling the application of hydraulic fluid to the piston and cylinder arrangement, to control the pressurization of the latter and, thereby, movement of the worm transversely of the last, as the sensor moves along the edge of the last.

3,803,655

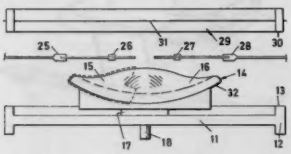
APPARATUS FOR MANUFACTURING LEATHER GOODS AND THE LIKE

Raymond Charles White, Newtonhurst, Darlington Rd., Bathwick, Bath, Somerset, and William Frank Walker, 8, Friars Cl., Croyland Park, Wellingborough, Northamptonshire, both of England

Division of Ser. No. 126,042, March 19, 1971, Pat. No. 3,688,326. This application July 21, 1972, Ser. No. 273,840

Int. Cl. A43d *11/00*

U.S. Cl. 12—54.1 **8 Claims**



Apparatus for manufacturing goods made of leather or like material in which a flat piece of the material, preconditioned to be readily deformable, is located between a diaphragm and a former, the diaphragm is moved to nip the material between the diaphragm and the former, the locating means is removed, the diaphragm is moved towards the former until a frame in which it is held makes a vacuum-tight seal with a table on which the former is mounted, and vacuum is applied to cause the diaphragm to draw and shape the material closely around the former.

ERRATUM

For Class 12—142 R see:
Patent No. 3,803,657

3,803,656

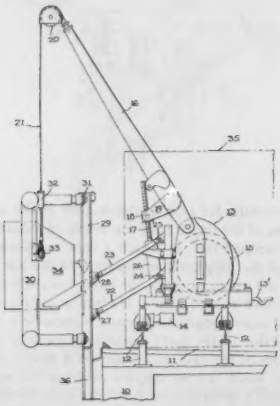
AUTOMATIC WINDOW WASHER

Robert D. Fannon, Jr., Columbus, Ohio, assignor to Harsco Corporation, Harsisburg, Pa.

Division of Ser. No. 107,957, Jan. 20, 1971, Pat. No. 3,715,774. This application May 24, 1972, Ser. No. 256,609

Int. Cl. A47l *5/38*

U.S. Cl. 15—302 **2 Claims**



An automatic window washer has a module riding in tracks on the face of the building and is controlled from a unit mounted on the roof of the building. As the module moves down the face of the building the presence of areas to be washed is automatically sensed and the washing operations then automatically begun and terminated by equipment in the module. The module or modules may be mounted in a span frame for lateral movement therein for washing more than one vertical column of windows when the tracks on the face of the building are spaced apart by a plurality of columns of windows. The washing equipment in the module may take various forms for washing windows of curtain front buildings and for washing recessed windows.

3,803,657

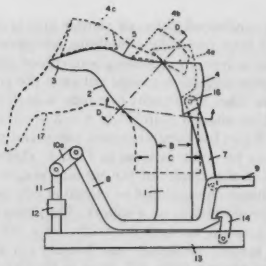
METHOD OF REMOVAL OF FINISHED FOOTWEAR FROM LASTS AND LAST SUITABLE FOR SAID METHOD

Anton I. Liebscher, Waynesville, N.C., assignor to Ro-Search, Incorporated, Waynesville, N.C.

Filed Oct. 19, 1972, Ser. No. 299,130

Int. Cl. A43d *9/00*

U.S. Cl. 12—142 R **1 Claim**



The invention discloses improvements in the removal of finished footwear from the last and includes the steps of moving the heel part of the last upwardly to release the tension on the footwear and exert an upward force on the same and then sliding the heel part forwardly on the last sole to exert a forward force on the footwear to separate the same from the fore part of the last.

3,803,658

CLEANING DEVICES

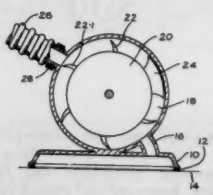
Johann Nicolaas Raubenheimer, 46 Kloof Rd., Bedfordview, Transvaal, South Africa

Filed Jan. 10, 1972, Ser. No. 216,603

Claims priority, application South Africa, Jan. 14, 1971, 71/231; Feb. 17, 1971, 71/1024

Int. Cl. E04h *3/20*

U.S. Cl. 15—1.7 **5 Claims**



The invention concerns a cleaning device for cleaning a surface and which comprises at least one cleaning head to fit against the surface to be cleaned. The head has an inlet for

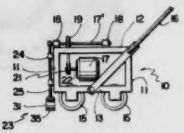
permitting suction to be applied through a suction pipe so that liquid can be sucked from the surface through the head into the suction pipe. Automatic means is provided for enabling the suction periodically to be cut off. The automatic means is such that if there is a cluster of more than one head, suction to all the heads in the cluster is cut off substantially simultaneously.

3,803,659

PIN TYPE CLEANING DEVICE

Gerhard Sawatzky, 83 Sterling Ave., Winnipeg, Manitoba, Canada

Filed July 21, 1972, Ser. No. 274,065
Int. Cl. B08b *11/00*; A01b *45/02*
U.S. Cl. 15—3 **10 Claims**



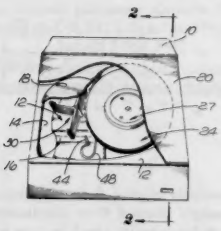
A plurality of spring loaded pins is held in a main block which is moved up and down by an eccentric. The base is apertured to receive the pins and if the base is placed on a surface and the block is reciprocated, the pins protrude from the base and retract therein as the reciprocation occurs. If used on a screen type surface, the pins clean the apertures in the screen. The device can also be adapted for use in aerating lawns and the like.

3,803,660

APPARATUS FOR CLEANING DISCS

Norman D. Jividen, Orange, and Joseph M. Ludka, Palos Verdes Peninsula, both of Calif., assignors to Randomex, Inc., Palos Verdes Peninsula, Calif.

Filed Apr. 27, 1972, Ser. No. 248,112
Int. Cl. A46b *13/04*
U.S. Cl. 15—21 C **9 Claims**



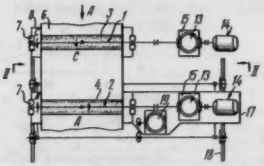
A T-shaped brush assembly, having a plurality of brush arms arranged in three banks, rotates adjacent to a rotating disc pack so that the brushes on the end of each brush arm pass between and bear against the recording surfaces of the corresponding adjacent discs of the disc pack. Filtered cleaning solution is sprayed against each of the brushes to clean the brushes of contaminants removed from the discs before the brushes contact the discs.

3,803,661

APPARATUS FOR CLEANING STRIP MATERIAL

Viktor Samsonovich Salukvadze, Parkovaya ulitsa, 42, kv. 53, and Vyacheslav Egorovich Musyakin, Sirenevy bulvar, 36, kv. 51, both of Moscow, U.S.S.R.

Filed July 7, 1972, Ser. No. 269,807
Int. Cl. A46b *13/02*
U.S. Cl. 15—77 **3 Claims**



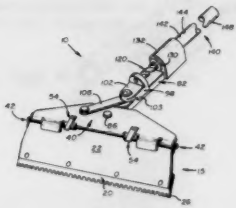
Strip material cleaning apparatus wherein the material being cleaned is positioned in the nips formed between rotary cleaning tools mounted for rotation on parallel shafts and respective back-up rolls, the latter being associated with drive means for positive forwarding of the material being cleaned, the rolls being rotated in the direction of the forwarding of the material, together with one half of the total amount of said parallel shafts, the other half of said shafts being rotated in the opposite direction. The shaft which is the first one of said parallel shafts in the direction of the forwarding of the material being cleaned is rotated in the course of a cleaning operation solely in the direction opposite to that of the forwarding of the material being cleaned.

3,803,662

CARPET ADHESIVE SPREADER

Robert G. Glejf, Des Plaines, Ill., assignor to Kinkead Industries Incorporated, Chicago, Ill.

Filed Dec. 7, 1972, Ser. No. 313,009
Int. Cl. E01c *19/00*; B05c *11/02*
U.S. Cl. 15—104 S **18 Claims**



A coating device for spreading adhesives, comprising a blade and mounting member hinged to a frame member between push and pull stops, the frame member being pivotally connected to a long handle by means causing the frame to pivot about an axis perpendicular to the handle, thus controlling the flow of excess adhesive.

3,803,663

BRUSH HAVING ADJUSTABLE HARDNESS

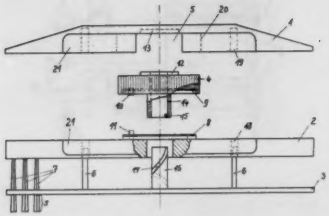
Georg Weihrauch, Aschbach, Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH, Waldmechelbach/Odenw., Germany

Filed Feb. 15, 1972, Ser. No. 226,596

Claims priority, application Germany, Feb. 18, 1971, 2107900

Int. Cl. A46b 9/08

U.S. Cl. 15—169 12 Claims



Brush having adjustable bristle hardness includes a bristle plate having a multiplicity of bristle brushes extending from one side thereof; a perforated plate located on the one side of the bristle plate and formed with a multiplicity of perforations through which the bristle brushes, respectively, extend; a cover member located on the other side of the bristle plate; an adjusting wheel disposed between the bristle plate and the cover member; and threaded connecting means extending between the perforated plate and the adjusting wheel and cooperable with the latter for adjustably spacing the perforated plate and the bristle plate at varying distances from one another.

3,803,664

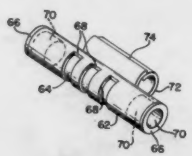
WINDSHIELD CLEANER DISPENSER

Arthur L. Triplett, Auburn, Wash., assignor to Driver's Dream, Inc., Auburn, Wash.

Filed Nov. 4, 1971, Ser. No. 195,640

Int. Cl. B60s 1/50

U.S. Cl. 15—250.03 2 Claims



A refillable windshield cleaner dispenser attachable to vehicle windshield wipers and adapted to hold and dispense a dissolvable cleaning substance or the like. The device consists of a slotted capsule, a cleaning substance retained within the capsule and adapted to dissolve partially upon contact with water and run out of the slots, and means for attaching the capsule to the vehicle windshield wiper. The cleaning substance is preferably retained in solid form, the surface thereof being dissolvable gradually by rain water or the spray from automatic windshield cleaning systems.

3,803,665

ROLL DOCTOR APPARATUS

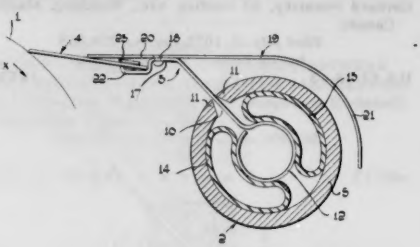
Charles Barry Winterburn, Hawkshaw Bury, and Thomas Scholes, Ramsbottom, near Bury, both of England, assignors to Joseph Winterburn Limited, Bury, England

Filed Jan. 1, 1973, Ser. No. 320,257

Claims priority, application Great Britain, Jan. 1, 1972, 6/72

Int. Cl. D21g 3/02, 3/04

U.S. Cl. 15—256.51 8 Claims



Apparatus for doctoring a roll for example in a paper-making machine, comprising a flexible doctor blade carried by a flexible support which extends into a rigid cylindrical carrier tube through a longitudinal opening defined by portions of the tube which are formed to provide pivot means for the support, two inflatable tubes which are interposed between the support and the carrier tube inside the latter for pivoting the support to cause the doctor blade to engage with or disengage from the roll and which locate the support relative to the carrier tube, and a guard plate carried by the support and arranged to direct material removed from the roll by the blade away from the opening in the carrier tube.

3,803,666

INDUSTRIAL CARPET AND FLOOR CONDITIONER

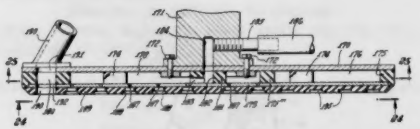
Harold T. Sawyer, Pacific Palisades, Calif., assignor to Vernon D. Beehler, Los Angeles, Calif.

Division of Ser. No. 150,075, June 4, 1971, Pat. No. 3,739,417.

This application Jan. 8, 1973, Ser. No. 321,761

Int. Cl. A47l 11/03

U.S. Cl. 15—320 12 Claims



A single transversely aligned floor conditioning plate or a group of transversely aligned floor conditioning plates are mounted on a tubular support which in turn is carried by an appropriate vehicle. For vibrating the plates at or near one of their modes of natural frequency, a single source of sinusoidal energy vibrating in the low sonic range is mounted midway between opposite ends of a resonant tubular support, at an antinodal point. When more than one resonant plate is employed, the other plates are also mounted at antinodal points by means of pedestal supports. A work shoe below each plate has an accumulator chamber for reception of cleaning liquid located above the work shoe and separated from the work shoe by a series of resilient spring mounts located at antinodal points which alone and/or in combination with the liquid

transfer the sinusoidal acoustic resonant energy from the source through the tubular support and plate thereon into the conditioning fluid. The fluid medium is transformed into a state of cavitation and continues after it leaves the chamber. Subsequently a suction apparatus draws the spent and soiled conditioning fluid away from the conditioning operation.

3,803,667

UNIVERSAL HANDLE FOR SURGICAL IMPLEMENTS

Anthony T. Rose, 603 Hudspeth Ave., Simi, Calif.

Filed Feb. 7, 1972, Ser. No. 224,179

Int. Cl. A47j *45/10*; A61b *17/16*; F16b *23/00*

U.S. Cl. 16—114 R **13 Claims**

A surgical chisel apparatus wherein the chisel head is removable with respect to the handle, the connecting end of the handle is bifurcated forming a pair of non-parallel spaced apart legs, a fastener to bind together the legs into a pivotal relationship about the mating end of the chisel head, thereby effecting secure retention of the mating head in cooperation with the connecting end. A hammer can be incorporated within the chisel handle. A novel wrench is employed to operate the fastener.

3,803,668

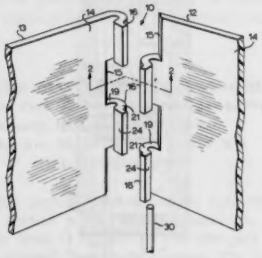
INCORPORATED HINGE WITH STOP AND REMOVABLE LOCK PIN

Cassius D. Remick, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Oct. 4, 1972, Ser. No. 294,942

Int. Cl. E05d *3/02*

U.S. Cl. 16—128 R **8 Claims**



This invention provides a hinge member which may cooperate with another similar hinge member to form a hinge. Each hinge member includes a plate element and at least one hinge knuckle extending outwardly from a straight edge of the plate element to define a U-shape of which one arm joins the plate element and of which the other arm terminates in a ledge extending away from said one arm.

3,803,669

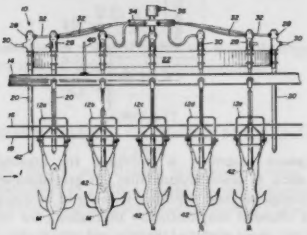
SYSTEM FOR AUTOMATICALLY WASHING THE INTERIOR OF FOWL CARCASSES

Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.

Filed Sept. 2, 1971, Ser. No. 177,221

Int. Cl. A22b *3/08*

U.S. Cl. 17—11 **13 Claims**



The specification discloses a system for automatically washing the interiors of fowl carried by an overhead conveyor. The system includes a frame defining a curved, closed path which is disposed adjacent one side of the overhead conveyor. A plurality of downwardly disposed probes are mounted on the frame about the closed path, each of the probes including a lower extention member having spray apertures defined therein. Structure is provided to move the probes about the closed path so as to be disposed over the fowl moving along the conveyor. Pressurized fluid is supplied to each of the probes. Valves are mounted in each of the probes and are selectively operated to supply fluid to move the extension members downwardly within the interior of the fowl. Fluid is then sprayed from the apertures within the interiors of the fowl. In large fowl such as turkeys, the extension member also serves to rupture the membrane above the lung area of the fowl.

3,803,670

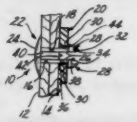
FASTENER DEVICE

William J. Johnson, 8060 St. Paul, Detroit, Mich.

Continuation-in-part of Ser. No. 135,894, April 21, 1971, Pat. No. 3,717,377. This application Aug. 14, 1972, Ser. No. 280,155

Int. Cl. F16b *21/00*

U.S. Cl. 24—73 P **14 Claims**



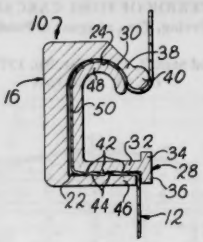
A device for fastening together lapped panels having a hole therethrough. The device has a snap pin with a head and a shank portion with a pair of radially spaced resilient and flexible fingers adapted to extend through the hole of the panels and receive a washer releasably retained thereon by a pair of generally opposed lobes on the free ends of the fingers.

3,803,671

ATTACHING ASSEMBLY FOR SHEET MATERIAL

Francis X. Stuppy, Greenwood, and Emmett Stephenson, Raytown, both of Mo., assignors to Stuppy Flora, Inc., North Kansas Ciy, Mo.

Filed Oct. 26, 1972, Ser. No. 301,091
Int. Cl. A44b *21/00*
U.S. Cl. 24—243 K 10 Claims



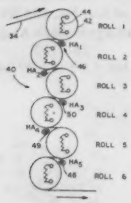
A two-piece assembly is provided for attaching sheet material, such as polyethylene film, to greenhouses and the like. An elongated base member is secured to a support and includes a channel longitudinally therealong for receiving a portion of the sheet material therein and which also receives a material holding element having a configuration corresponding to that of the channel, the member and the element cooperating to releasably clamp the portion of the material in the channel. The element is nested in the channel in a manner that a pulling tension on the material serves to further tighten the clamping action of the element with the member, thus insuring a positive holding action. The element is further provided with a longitudinally extending flange in order that a screwdriver or similar tool may be utilized to pry the element out of the channel to facilitate easy removal or replacement of the sheet material.

3,803,672

APPARATUS FOR PRODUCING HIGH MODULUS GRAPHITE MATERIALS

Donald W. McGuffin; Richard J. Larsen, both of Torrance; Robert W. Mitchell, Hawthorne, and Bernard E. Caruso, Upland, all of Calif., assignors to Hitco, Gardena, Calif.

Filed Apr. 13, 1971, Ser. No. 133,584
Int. Cl. D06c *3/00*
U.S. Cl. 26—68 8 Claims



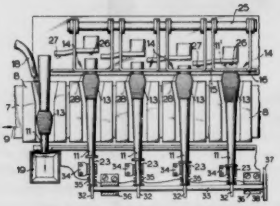
A continuous web process and apparatus for manufacturing high modulus graphite fibers and fabric are disclosed. Precursor fabric is incrementally stretched dynamically by applying an initially high tension to the fabric and heating the fabric to stretching temperature while maintaining the stretch ratio substantially constant. The tension is then reduced to a low value before preoxidation temperature is reached and increases during preoxidation to a higher value due to shrinking and/or application of tension to the fabric. The fabric is then continuously fired and graphitized. The stretching unit includes a plurality of rolls successively driven at a controlled faster speed and successively heated to a higher temperature. The fabric is heated quickly between each roll to a temperature intermediate to the temperature of the rolls by applying a jet of hot air to the fabric from a hot air sparger air knife so that substantially all the stretching occurs during the interoll travel.

3,803,673

DEVICE FOR REMOVING YARN REMAINDERS FROM COIL CORES

Willi Kupper, Rickelrath, Germany, assignor to W. Schlafhorst & Co., Monchengladbach, Germany

Filed July 8, 1971, Ser. No. 160,677
Claims priority, application Germany, July 8, 1970, 2033718
Int. Cl. D03d *45/58*
U.S. Cl. 28—20 5 Claims



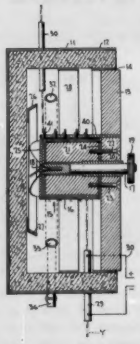
Device for removing yarn remainders from coil cores includes yarn stripping means accommodated to the diameter of a respective coil core, the coil core and the yarn stripping means being relatively displaceable in the direction of the longitudinal axis of the coil core, the yarn stripping mean including means for guiding the relative displacement of the coil core and the yarn stripping means in pilgrim stepwise manner.

3,803,674

METHOD AND APPARATUS FOR HEATING THERMOPLASTIC YARN

Warren A. Seem, Box 4939, Nassau, Bahamas, and Robert F. Conrad, Box 5341 Falmouth Rd., Washington, D.C.

Continuation of Ser. No. 722,592, April 19, 1968, abandoned.
This application Mar. 20, 1970, Ser. No. 28,269
Int. Cl. D02j *13/00*
U.S. Cl. 28—62 13 Claims



The disclosure relates to a method and apparatus for heating thermoplastic yarn wherein yarn is passed in contact with a

heater surface and a gaseous atmosphere enveloping the yarn and the surface is maintained at a temperature which alters or precludes the descending temperature gradient away from the heater surface which is characteristic of yarn heaters presently used in the art. In particular the disclosure concerns a heater having a revolvable roll or other movable heating surface mounted within an enclosure. Yarn is introduced into the enclosure through a small tube and passed in contact with the movable heating surface and then withdrawn from the enclosure through another small tube. A heating element is mounted within the enclosure to heat the air therein. The roll has fanblades mounted at one end. The movable heating surface is driven by shaft means which is connected to the yarn processing machine with which the heater is associated and rotation of the roll causes the fan to rapidly circulate heated air within the enclosure. Baffles are provided to deflect the heated air over the surface of the revolving roll.

3,803,675

PROCESS OF DIFFERENTIALLY CRIMPING

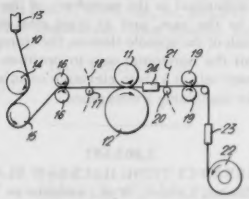
George Waterhouse, Macclesfield, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Dec. 16, 1971, Ser. No. 208,829

Claims priority, application Great Britain, Dec. 17, 1970, 59873/70

Int. Cl. D02g *1/00*

U.S. Cl. 28—72.1 **14 Claims**



Drawable filaments of polyesters, polyamides or polyolefines are crimped by applying a modifying process differentially across the filaments cross-section, including differential heating, while the filaments pass between the nip of two nip rollers, simultaneously with drawing the filaments by drawing means operating upstream and/or downstream of the nip so that the draw point is at or close to the nip. Further features comprise feeding the filaments to and from the nip along the common tangent to the two nip rollers and drawing the filaments by equal amounts upstream and downstream of the nip, to give a total draw which equals the maximum natural draw which can be attained. Alternatively the filaments can be laid with an arc of pre-wrap or post-wrap on one or other of the nip rollers, which preferably are differentially heated.

3,803,676

BATTERY GRID CASTING AND TRIMMING MACHINE

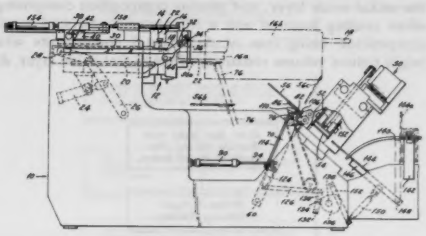
Robert R. Rader, Port Huron, Mich., assignor to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

Filed Jan. 29, 1973, Ser. No. 327,308

Int. Cl. B23p *13/00*

U.S. Cl. 29—2 **12 Claims**

A battery grid casting machine of the type wherein the movable mold section is disposed in a generally horizontal plane when the mold is opened so that the grid is ejected therefrom in a generally horizontal position. The machine includes a grid transfer mechanism having a pallet which is disposed horizontally directly below the open mold section to receive the ejected grid and which is then lowered and swung forwardly in an arcuate manner to a position adjacent a grid trimming mechanism. In the latter position the pallet is inclined forwardly and downwardly and retractable stop



means are associated with the pallet for properly aligning the grid for entry into the grid trimming mechanism.

3,803,677

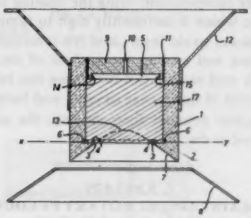
METHOD FOR MAKING CATHODES FOR ELECTRON GUNS

Michel Alais, Orsay, and Robert Moutarde, Sevres, both of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Calude, Paris, France

Filed Apr. 28, 1972, Ser. No. 248,617

Int. Cl. H01j *9/02*

U.S. Cl. 29—25.14 **1 Claim**



This invention relates to the manufacture of cathodes for use in electron guns. It is customary to make such cathodes with a concentrator member that forms an extension of a tube forming a housing for an electron-emissive pellet. This concentrator has an opening which diverges outwardly into the shape of a truncated cone having a predetermined geometrical position. In accordance with the invention, the housing is machined to a predetermined shape, whilst the pellet is located within said tubular housing and, as a result of this, the machined surface is co-extensive with the truncated conical opening. A plug member may be used to hold the pellet in its housing and this plug may contact the pellet through the intermediary of an annular member: this annular member may be attached to the plug. Alternatively, the plug contacts the pellet only at a limited number of points on its surface.

3,803,678

THE METHOD OF MAKING NICKEL OXIDE CAPACITOR

George E. Gynn, Fort Wayne, Ind., assignor to Syncro Corporation, Oxford, Mich.

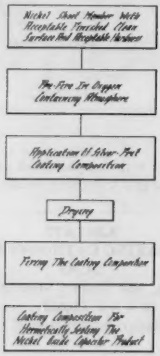
Continuation of Ser. No. 67,702, Aug. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 3,874, May 4, 1970, abandoned, which is a continuation of Ser. No. 738,328, June 19, 1968, abandoned. This application Oct. 18, 1971, Ser. No. 190,368

Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **6 Claims**

Process of preparing a solid capacitor from a sheet member formed of nickel having a thickness between 8 and 21 mils, by

pre-firing the nickel sheet in a specifically controlled oxygen containing atmosphere to form a nickel oxide layer on a surface of the nickel sheet, applying a coating composition over the nickel oxide layer, said coating composition comprising a silver coating material and a frit material and said coating composition being free of detrimental components which might reduce volume resistivity of the nickel oxide layer, drying the coating composition, firing the coating composition at a temperature which is sufficiently high to remove excess oxygen in the nickel oxide layer, said frit material being operative for wetting and sealing the surface of the nickel oxide layer but with said sealing not occurring too rapidly so as to prevent removal of the excess oxygen, and hermetically sealing the capacitor product formed; and, the solid capacitor product formed as disclosed herein.


Nickel Sheet Member With Acceptable Finished Clean Surface And Acceptable Thickness
Pre-Fire In Oxygen Containing Atmosphere
Application Of Silver-Frit Coating Composition
Drying
Firing The Coating Composition
Coating Composition For Hermetically Sealing The Nickel Oxide Capacitor Product

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3,803,679

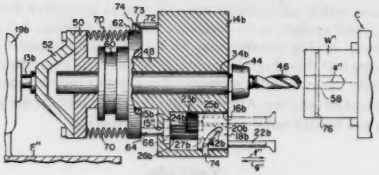
CENTER MAINTAINING ROTARY FEEDING SYSTEM

Roger S. Eckhardt, 255 Lockwood St., Saginaw, Mich.

Filed May 27, 1971, Ser. No. 147,447

Int. Cl. B23b *7/14*

U.S. Cl. 29—27 R **25 Claims**



Apparatus for machining a workpiece including a workpiece support member, a rotatable carrier supporting a rotary cutting tool for movement therewith in an annular path of travel toward and away from the workpiece, and for rotary movement relative thereto between a remote inoperative position and an operative position in cutting engagement with a workpiece on a support member to cut an arcuate surface concentric about the axis of the workpiece as the tool moves in the annular path.

3,803,680

MACHINING CENTER WITH A STORAGE DRUM ROTATABLE ABOUT A HORIZONTAL AXIS

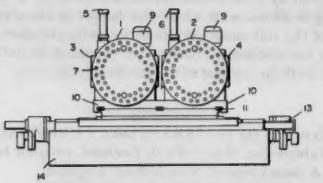
Hans Kuhnert, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Aug. 5, 1971, Ser. No. 169,271

Claims priority, application Germany, Aug. 5, 1970, 2038842

Int. Cl. B23b *39/20*

U.S. Cl. 29—36 **15 Claims**



Machining center includes a cross-feed table, at least one storage drum mounted on the cross-feed table, the storage drum being rotatable about a horizontal axis and displaceable in direction of the axis, a plurality of spindle sleeves mounted in the storage drum at mutually spaced locations along at least one circle symmetrical to the periphery of the storage drum and parallel to the axis, and at least one machining tool received in each of the spindle sleeves, the storage drum being turnable about the horizontal axis to positions at which the tools are respectively at a given elevation so as to be in operating position for machining a workpiece.

3,803,681

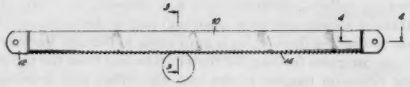
THREAD CUTTING HACKSAW BLADE

Leslie H. Williams, Lander, Wyo., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,200

Int. Cl. B23d *71/04*; **B23g** *5/00, 1/26*; **B23c** *3/28*

U.S. Cl. 29—78 **1 Claim**



A saw blade for a hacksaw adapted for cutting threads comprising an elongated relatively flat member having relatively thin ends and a relatively thick main body, one longitudinal edge of the member having pointed cutting teeth which are beveled on the sides to form cutting edges and which are angled at 60°.

3,803,682

ROLLER FOR CONVEYOR SYSTEMS

Hans Vom Stein, Wermelskirchen, Germany, assignor to Hans Vom Stein oHG, Dhuenn/Rhld., Germany

Filed Jan. 10, 1973, Ser. No. 322,504

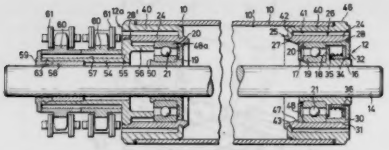
Claims priority, application Germany, Feb. 4, 1972, 2205243

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 R **18 Claims**

A roller for conveyors has an elongated cylindrical sleeve. Antifriction roller bearings are mounted on a shaft passing

through and coaxial with the sleeve at each end thereof. Holding means are provided which cooperate with the shaft and the inner race of the bearings for retaining the bearings from axially moving along the shaft. An intermediate annular tapered plastic ring engages the holding means with its radially inward surface and is provided on its radially outward surface with



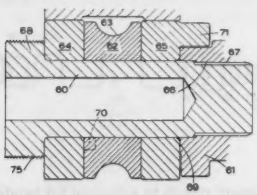
coaxial gear teeth. An outer annular tapered plastic ring has on its radially inward surface axial gear teeth engaged with those of the intermediate ring and is configurated to engage the sleeve and axially lock the intermediate ring when the rings are wedged between the sleeve and the holding means. On one end of the sleeve, the intermediate ring extends axially beyond the sleeve and is provided with sprocket wheels.

3,803,683

ROLLING MILL WORK ROLL ASSEMBLIES

Roy R. Oxlade, London, England, assignor to The British Iron and Steel Research Association, London, England

Filed Dec. 3, 1969, Ser. No. 881,801
Claims priority, application Great Britain, Dec. 10, 1968, 58650/68
Int. Cl. B21b *31/08*
U.S. Cl. 29—125 **5 Claims**



A rolling mill work roll assembly comprises a work roll held in position on a hollow shaft member by the shaft member being in a stressed condition to exert radial loading and preferably also axial loading on the work roll. The grip is sufficient to transmit normal driving torque. The hollow shaft is operated by hydraulic pressure means which acts internally to lengthen the bolt and shrink its diameter to permit ready assembly and dis-assembly. The roll is preferably composite, that is it comprises a tungsten carbide rolling ring supported on each side by steel sleeves.

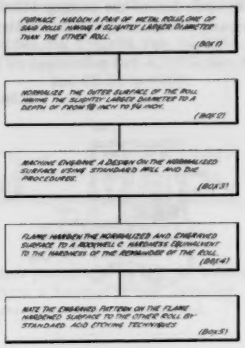
3,803,684

METHOD OF MANUFACTURING FULLY FURNACE HARDENED MATED STEEL EMBOSSING ROLLS

Frank W. Broderick, New Providence, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 8, 1973, Ser. No. 321,601
Int. Cl. B23p *11/00*; B21h *1/14*
U.S. Cl. 29—148.4 D **6 Claims**

A method of manufacturing a pair of mated steel embossing rolls which are fully furnace hardened. A pair of steel rolls are machined, except for the final grinding operation, and then fully furnace hardened. One roll has its surface normalized


FURNACE HARDEN A PAIR OF METAL ROLLS ONE OF SAID ROLLS HAVING A SLIGHTLY LARGER DIAMETER THAN THE OTHER ROLL. (BOX 1)
NORMALIZE THE OUTER SURFACE OF THE ROLL HAVING THE SLIGHTLY LARGER DIAMETER TO A DEPTH OF FROM 1/8 INCH TO 3/4 INCH. (BOX 2)
MACHINE ENGRAVE A DESIGN ON THE NORMALIZED SURFACE USING STANDARD MILL AND DIE PROCEDURES. (BOX 3)
FLAME HARDEN THE NORMALIZED AND ENGRAVED SURFACE TO A ROCKWELL C HARDNESS EQUIVALENT TO THE HARDNESS OF THE REMAINDER OF THE ROLL. (BOX 4)
MATE THE ENGRAVED PATTERN ON THE FLAME HARDENED SURFACE TO THE OTHER ROLL BY STANDARD ROLL STITCHING TECHNIQUES (BOX 5)

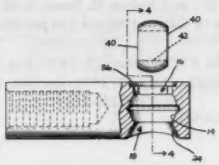
and is machine engraved. The engraved surface is flame hardened and mated to the other roll to produce a pair of fully hardened mated embossing rolls.

3,803,685

BALL JOINT AND METHOD OF FABRICATION

Robert A. Muhn, Fort Wayne, Ind., assignor to Tuthill Pump Company, Superior Ball Joint Division, New Haven, Ind.

Filed Mar. 29, 1972, Ser. No. 239,142
Int. Cl. B23p *11/00*
U.S. Cl. 29—149.5 B **4 Claims**



This invention relates to a ball joint and method of fabrication in which a body is machined to provide therein a part-spherical cavity centrally thereof and two opposed openings, one of these openings being provided with a slot-like portion and the other with a frusto-conical shape. A bearing ball with diametrically opposed parallel flats or sides is passed edgewise through said slot portion and into said cavity where it is retained for swiveling movement. The ball is provided with a diametral bore normal to said sides which receives a reduced diameter end portion of a stud that projects through said frusto-conical opening. Said stud end portion is swaged to secure it to said ball. In the fabrication, a punching operation is utilized to form the slot-like portion, an annular groove being coaxially provided in the wall of said cavity for assuring complete severance of the metal chips resulting from the punching operation.

3,803,686

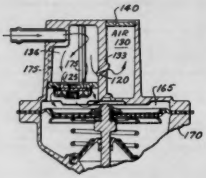
METHOD OF MANUFACTURING FUEL PUMPS

Claude F. Phillips, 411 N.W. 10th St., Fairfield, Ill.

Division of Ser. No. 889,831, Dec. 24, 1969, abandoned, which is a division of Ser. No. 566,504, July 20, 1969, abandoned, Continuation of Ser. No. 833,856, May 29, 1969, Pat. No. 3,530,991. This application Nov. 30, 1971, Ser. No. 203,344
Int. Cl. B23p *15/00*
U.S. Cl. 29—156.4 **2 Claims**

A method of manufacturing a fuel pump is disclosed which simplifies present methods in that an integral casting of a por-

tion of the housing has a valve chamber and a pulsator chamber cast therein having a common wall. A restricted port is provided by drilling through the wall, access for a drill being had through an open end of the casting. Most modifications show the previously described method. Completion of the fuel



pump is accomplished by securing another casting to the previously described casting at the open end. Other modifications are disclosed wherein a restricted port is provided in an insertable disc force fitted intermediate the valve chamber and pulsator chamber to effect the common wall.

3,803,687

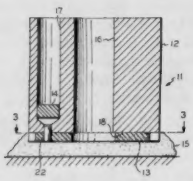
BONDED BRONZE-IRON VALVE PLATE FOR STEEL CYLINDER BARREL AND METHOD OF MAKING SAME

Martin J. Alger, Jr., and Nelson H. Dunn, both of Watertown, N.Y., assignors to General Signal Corporation, Watertown, N.Y.

Division of Ser. No. 93,297, Nov. 27, 1970, Pat. No. 3,709,107. This application July 27, 1972, Ser. No. 275,730

Int. Cl. B23p *15/00*

U.S. Cl. 29—156.4 WL **10 Claims**



The disclosure concerns steel cylinder barrels for piston pumps and motors having bonded non-steel valve plates. The valve plate comprises a sintered iron powder matrix which is impregnated with bronze and is metallurgically and mechanically bonded to one end of the steel cylinder barrel. The valve plate is made from a porous sintered iron blank which is mounted in contact with one end of a steel barrel blank in an assembly which includes a mass of bronze in the solid state. The assembly is heated in a non-oxidizing atmosphere to a temperature between 1,900° F and 2,000° F to melt the bronze and cause it to infiltrate the sintered valve plate blank and bond to the steel. Thereafter, the assembly is cooled in the non-oxidizing atmosphere to solidify the bronze, followed by air cooling to room temperature. Finally, the finished valve plate is machined from the bronze-impregnated sintered preform.

3,803,688

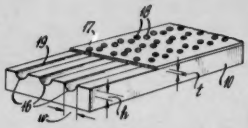
METHOD OF MAKING A HEAT PIPE

Wayne P. Peck, St. Petersburg, Fla., assignor to Electronic Communications, Inc., St. Petersburg, Fla.

Filed July 13, 1971, Ser. No. 162,084

Int. Cl. B21d *53/02*; **B23p** *15/26*

U.S. Cl. 29—157.3 R **12 Claims**



A heat-transfer device or heat pipe having an integral screen-wick structure which provides relatively great contact area between the internal working fluid and the heat input. The screen wick is fabricated by a plurality of photographic etching and plating steps.

3,803,689

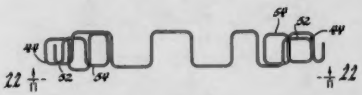
METHOD FOR BENDING FLAT PATTERN SPRING STRIPS

Thaddeus A. Baginski, Redford Township, Mich., assignor to Lear Siegler, Inc., Detroit, Mich.

Filed Mar. 17, 1972, Ser. No. 235,698

Int. Cl. B21f *35/00*; **B23p** *13/00*

U.S. Cl. 29—173 **5 Claims**



This disclosure relates to a method for bending flat pattern spring strips which are characterized as including a plurality of laterally spaced apart, generally parallel torsion bars connected alternately on opposite sides by connecting arms. The method comprises the steps of forming a first 90° bend in a first plane of the spring strip along one of the connecting arms, turning the free end portion out of the first plane by twisting the connecting arm and forming a second 90° bend along the connecting arm to dispose the free end portion defining a depending leg adjacent the plane of the spring strip and angularly offset therefrom. Providing a standard fishmouth section on one end of the spring strip requires the performance of the above-described operation on two connecting arms thereby forming a first and second interconnected depending leg.

3,803,690

CENTRIFUGAL FAN

Peter L. Cann, and Richard J. Duell, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

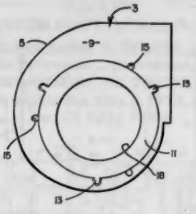
Division of Ser. No. 129,717, March 31, 1971, Pat. No. 3,698,833. This application June 21, 1972, Ser. No. 265,069

Int. Cl. B23p *15/00*, *17/00*

U.S. Cl. 29—156.4 R **2 Claims**

A centrifugal fan assembly including a removable orifice ring having tabs thereon, the ring being formed from the

material removed in the production of the side plate of the fan housing, the diameter of the orifice ring being substantially



equal to the diameter of the opening in the side plate of the fan housing, the tabs on the orifice ring being utilized to locate the orifice ring on the side plate of the fan housing.

3,803,691

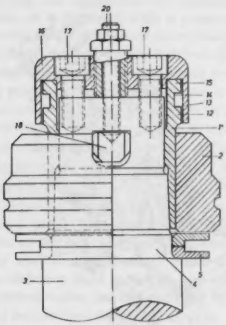
MEANS FOR MOUNTING A WORK ROLL ON A SHAFT

Karl Heinz Geese, Wildfangerweg 13, 41 Duisburg-Rahm; Hermann Oberscheven, Kehrwieder 10, 41 Duisburg-Wedau, and Karl Pradel, Im Schlenk 39, 41 Duisburg-Wanheinerort, all of Germany

Continuation of Ser. No. 232,221, March 6, 1972, abandoned, which is a continuation of Ser. No. 12,682, Feb. 19, 1970, abandoned. This application May 21, 1973, Ser. No. 362,161

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 R **14 Claims**



Means for mounting a work roll on a shaft. A cylindrical collet having at least one tapered surface, either exterior or interior, is pushed into an annular space between the roll shaft and work roll, one or both of these latter components having a reversely tapered surface which cooperates with the tapered surface or surfaces on the collet to provide a self-locking frictional connection. The collet is inserted and withdrawn from the annular space by mechanical or pneumatically operated mechanisms which coact with the collet and the shaft end or work roll.

3,803,692

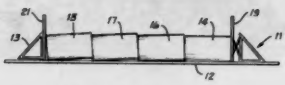
TANK ASSEMBLY APPARATUS

William B. Herdman, and Charles W. Sonnenberg, both of Indianapolis, Ind., assignors to Kennedy Tank & Manufacturing Company, Inc., Indianapolis, Ind.

Division of Ser. No. 118,378, Feb. 24, 1971, Pat. No. 3,711,933. This application Oct. 4, 1972, Ser. No. 294,938

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 B **3 Claims**



Steel cylinders placed end-to-end on rollers, are pushed together between a headstock and tailstock, being rolled, pried and hammered, as and where needed.

3,803,693

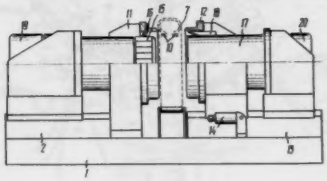
METHOD FOR EXTRACTING METAL REINFORCING PLIES FROM AUTOMOBILE TIRES AND A DEVICE FOR ACCOMPLISHING SAME

Karl Filippovich Kolkhir, Magistralnaya ulitsa 9; Jury Arkadievich Kogan, 1 Proletarskaya ulitsa 9, kv. 84; Vladimir Egorovich Khmelev, ulitsa Lenina, 14, kv. 9, and Vladimir Yakovlevich Krasovsky, ulitsa Chekhova 37, kv. 11, all of Moskovskaya oblast, U.S.S.R.

Filed Dec. 14, 1972, Ser. No. 315,242

Int. Cl. B23p *19/00;* **B23q** *17/00*

U.S. Cl. 29—200 D **5 Claims**



The extraction of reinforcing plies from automobile tires is accomplished through slackening the mounting portion thereof by making a great number of notches across the whole width of the cylindrical surface of the mounting portion by means of knives located in the plane of the tire bead.

The device for accomplishing this method is essentially a spindle with knives positioned thereon in a radial plane relative thereto, with the spindle having a diameter approximating the diameter of the mounting hole of a tire and being mounted with a possibility of lengthwise motion and simultaneous rotation with respect to the longitudinal axis thereof.

The method is advantageous due to the provision of optimum conditions of making notches across the whole width of the mounting portion of the tire beads which eliminates dulling of knives and provides an increase in the efficiency of the device as a whole.

3,803,694

SETTING OF CONTACTS ON A SUPPORT

Eike Hermann; Bernhard Otto, and Erdmann Edler Von Graeve, all of 19 route de Poissey, Villennes, France

Filed June 1, 1972, Ser. No. 258,578

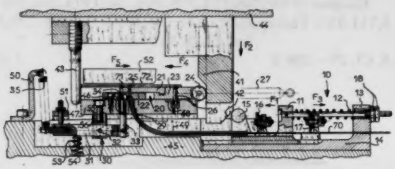
Claims priority, application France, June 8, 1971, 71.20704

Int. Cl. H05k *13/06*

U.S. Cl. 29—203 B **4 Claims**

Method and machine for setting contacts on supports wherein the contacts are formed by the riveting on said sup-

ports of sections of a wire of a suitable contact material severed the ones after the others from a wire fed step-by-step to a contact setting station. The wire sections are positively



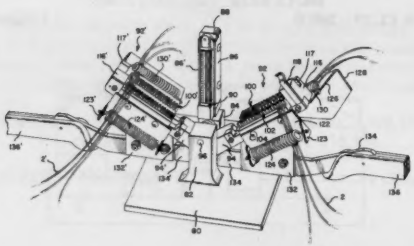
pushed into said supports after having been transferred into locations opposite those provided in the said supports when the latter are positioned at the station for setting the contact material in place.

3,803,695

APPARATUS FOR INSTALLING AN ELECTRICAL CONNECTOR ON CONDUCTORS INTERMEDIATE THE ENDS THEREOF

John James Tucci, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1972, Ser. No. 312,394
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 H **6 Claims**



Apparatus for connecting intermediate portions of conductors to electrical terminals mounted in a connector or the like has a connector jig for holding the connector in a predetermined position and wire jig, which holds the wires being inserted. The wire jig is movable between adjacent and remote positions relative to the connector jig. The wire jig has a central opening and has first wire holders adjacent to, and on each side of, this opening and second wire holders on each side of the opening which are removed from the first wire holders. Loose wires are laced through the second wire holders and through the first wire holders so that they span the opening in the wire jig. The wire jig is then moved to its adjacent position relative to the connector jig and an inserting member moves through the opening to transfer the wires from the first wire holders to the terminals.

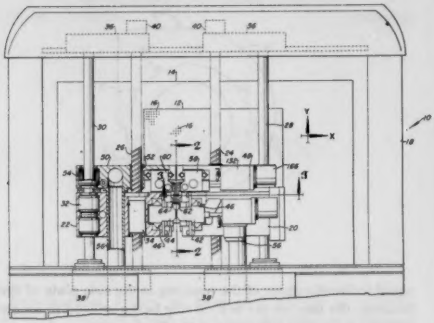
3,803,696

WIRE CONNECTING APPARATUS

William J. Harms, Nunica, and Michael Paul Wing, Grand Haven, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Feb. 1, 1973, Ser. No. 328,817
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **12 Claims**

Automatic wire connecting apparatus for making electrical interconnections between spaced apart terminal pins on a panel includes a dressing finger actuated by a helical rack and pinion arrangement connected to a single air cylinder actuator for rotating and linearly translating a dressing finger arm between a stored position and a working position. The



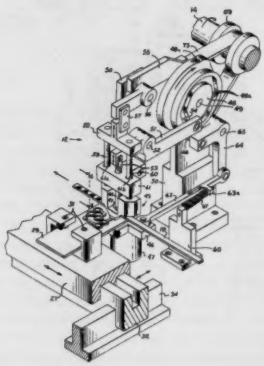
dressing finger is mounted on a housing which is reciprocally moved with respect to a terminal pin by a pivotally mounted arm constantly biased in one direction by an air cylinder actuator and controlled for movement in both directions by a cam driven by an electrical stepping motor.

3,803,697

MACHINE FOR MAKING THROUGH CONNECTION IN PRINTED CIRCUIT BOARD

Donald J. Baker, Williamsville, N.Y.; Stanley J. Gartner, Emporium, Pa., and Robert S. Oberg, Kenmore, N.Y., assignors to Sylvania Electric Products, Inc., Danvers, Mass.

Division of Ser. No. 62,772, July 17, 1970, Pat. No. 3,750,278, which is a division of Ser. No. 813,514, April 4, 1969, abandoned. This application Dec. 6, 1972, Ser. No. 312,647
Int. Cl. H05k *3/00, 13/04*
U.S. Cl. 29—203 B **6 Claims**



A machine for inserting a conductive element into a printed circuit board comprises a mechanism for holding and indexing the printed circuit board, a punch, a reel supported on one side of the punch and upon which a strip of the conductive stock material is wound, a punch head including a stripper and die assembly in registry with the punch and within which conductive strip material supplied by the reel is slidably retained, a mechanism for indexing the strip material, a female die in registry with the punch on the side of the circuit board opposite that facing the punch and adapted to be laterally shifted so as

to function as an anvil with respect to said punch, and a cammed disk having three cam surfaces for actuating said punch, punch head and shiftable die through appropriate followers and linkages.

3,803,698

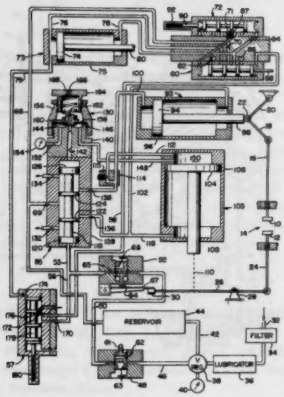
CONTROL SYSTEM FOR ASSEMBLING APPARATUS

Erich A. Schmidt, and Volker E. Schmidt, both of Lexington, Ky., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 270,755, July 11, 1972, abandoned. This application May 3, 1973, Ser. No. 357,040

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 C **20 Claims**



A control system for apparatus for assembling head and backing elements of a fastener with a piece of material includes a ram driven by a fluid motor for moving a backing element to an attaching station, an anvil driven by a fluid motor for moving a head element to the attaching station, a control valve supplying pressure to the fluid motors to drive the ram and anvil, a restriction delaying the supply of pressure to the anvil during fluid motor such that the ram is moved toward the attaching station before the anvil, and a pressure responsive assembly sensing pressure at the anvil driving fluid motor and responsive to a predetermined pressure thereat to operate the control valve to separate the ram and anvil automatically after the ram and anvil meet. Delivery means for supplying the fastener elements to the ram and anvil is controlled by a cycle of a fluid motor and a cycle control valve is responsive to operation of the delivery fluid motor to prevent the supply of pressure to a control valve for the delivery fluid motor until the delivery fluid motor has completed a cycle.

3,803,699

FLEXIBLE HOSE ASSEMBLY MEANS

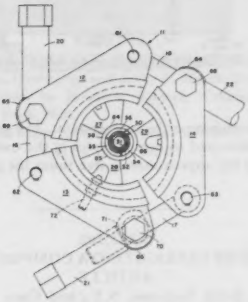
Leo L. Rizzo, Rt. 1, York, Maine

Filed Mar. 5, 1973, Ser. No. 337,997

Int. Cl. B23p *19/04*

U.S. Cl. 29—237 **10 Claims**

A field assembly tool for joining high pressure flexible hose and assembly fittings where industrial equipment is not available is provided. Three truncated extensions attached to interconnected, adjustable, generally triangular frame members are gradually closed upon respective arcuate segments which in turn compress the hose onto a sleeve which has been inserted between the inner, sealing, and outer, structural components of the high pressure hose. A nose ring is positioned over one end of the segments and a skirt ring over the other end after which the sleeve and a mating component are joined in conventional manner.



3,803,700

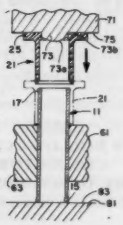
METHOD OF ASSEMBLING A GLASS TUBE AND THERMOPLASTIC RESIN FINGER GRIP SLEEVE ASSEMBLY

Edward A. Tischlinger, Des Plaines, Ill., assignor to MPL, Inc., St. Louis, Mo.

Filed Nov. 11, 1971, Ser. No. 197,717

Int. Cl. B23p *17/00, 11/02*

U.S. Cl. 29—400 **28 Claims**



Method of assembling a glass tube and a thermoplastic resin finger-grip sleeve assembly in which the finger-grip sleeve is cam-stretched onto and frictionally retained on a glass tube, which is a section of die-formed glass tubing. Increase in latitude of operable interference fit and stretch is effected by assembling the finger-grip sleeve in a heated condition.

3,803,701

METHOD OF EXTRUDING LIFE OF COPPER ANODE MOLDS

Robert H. Peterson, 2787 Lonedell Dr., Salt Lake City, Utah, and Richard L. Christiansen, 2606 Elm Ave., Salt Lake City, Utah

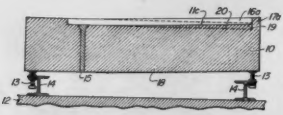
Filed Apr. 17, 1972, Ser. No. 244,811

Int. Cl. B23p *7/00*

U.S. Cl. 29—401 **3 Claims**

Copper anode molds excessively warped by normal use in anode casting wheels are machined internally of the mold

cavity to remove interior deformation of the bottom of the mold cavity and restore planar flatness thereto. The wall portions that border the machined bottom area are reduced in

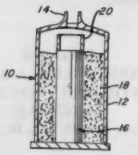


height by machining or by replacement. The so-reconstructed molds are shimmed to normal level in the casting wheel and are reusable for approximately five times the normal life of a new mold.

3,803,702
METHOD OF FABRICATING A COMPOSITE STEEL ARTICLE

Richard W. Bratt, Syracuse, N.Y., and Gary Steven, Mount Lebanon Township, Allegheny County, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Filed June 27, 1972, Ser. No. 266,765
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **9 Claims**

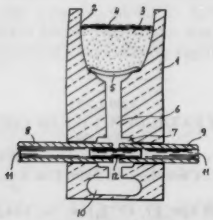


A composite alloy article and method for producing the same wherein the article, which may be cylindrical, has an alloy core surrounded by compacted alloy powder; the core is preferably relatively tougher and more machinable than the alloy powder. The composite is produced by isostatic compacting at elevated temperature. Preferred articles would be cutting tools, such as hobs and milling cutters.

3,803,703
WELDING OF HOLLOW CORE ALUMINUM CONDUCTORS

Ian David Montgomery, Toronto, Ontario, Canada, assignor to Canada Wire and Cable Company Limited, Tornoto, Ontario, Canada

Filed Mar. 27, 1972, Ser. No. 238,203
Claims priority, application Canada, Aug. 17, 1971, 120786
Int. Cl. B23k *5/22, 31/02*
U.S. Cl. 29—491 **4 Claims**

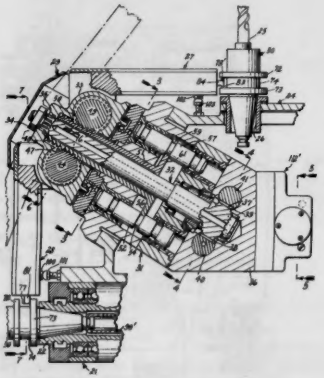


Hollow core aluminum conductors are joined by thermite or similar welding with the use of a tubular insert made of niobium within the hollow core ends, which insert bridges these ends with one another when the weld is applied.

3,803,704
MACHINE TOOL

William B. Seidel, Birmingham, Mich., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 28,742, April 15, 1970, Pat. No. 3,722,711. This application June 29, 1972, Ser. No. 267,662
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **8 Claims**

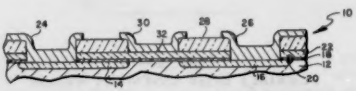


A pair of arms is employed to transfer tools between a tool storage mechanism and a spindle. The arms are independently pivoted on a rotating shaft, which rotates the arms between the spindle and the tool storage mechanism, so that the arm, which is supplying a tool to the tool storage mechanism, can be held in a parked position until a desired pocket in the tool storage mechanism is positioned to receive the tool. A unique gripping arrangement releasably connects the tool to the arm and requires only a simplified cooperating structure on a holder for the tool.

3,803,705
METHOD OF FORMING A MNOS MEMORY DEVICE

Norman W. Goodwin, Encino, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 22, 1972, Ser. No. 255,279
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 **14 Claims**



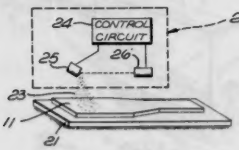
A MNOS memory device is formed by a process that eliminates or substantially minimizes contamination during formation and that results in a semiconductor device having a high field inversion threshold.

3,803,706

METHOD OF MAKING A TRANSDUCER

Robert Eugene Talmo, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,835
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 **4 Claims**



A method of fabricating a transducer wherein a glass layer is sputtered onto a kovar leaf spring beam. A monocrystalline silicon strain gage is then placed on the glass. The whole assembly is heated to between about 600 and 800°F, and a D.C. source of potential with positive and negative poles connected to the strain gage and glass layer, respectively, supplies current while the assembly is maintained with the aforementioned temperature range. The source has an output of between about 150 and 1,000 volts. The sputtering step speeds the process and saves considerable effort and expense in prior art lapping and bonding thin glass sheets to the beam.

3,803,707

METHOD OF MAKING AN IMPROVED REFRACTORY BOAT FOR METAL VAPORIZATION

Edmund M. Passmore, Wilmington, Mass., and Wilfrid G. Matheson, San Diego, Calif., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Continuation of Ser. No. 236,487, March 21, 1972, abandoned. This application July 2, 1973, Ser. No. 375,501
Int. Cl. H05b *3/00*
U.S. Cl. 29—611 **3 Claims**

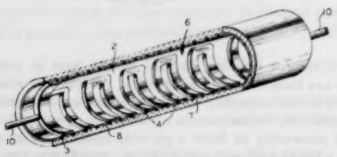
A self-resistance heated boat for metal vaporization is manufactured by hot pressing suitable refractory powders, including at least one that is electrically conductive, to a suitably dense ingot. An elongated boat is then machined from the ingot so that the longitudinal dimension of the boat is substantially perpendicular to the direction of pressing.

3,803,708

METHOD FOR MAKING A RESISTOR

Mitsuo Wada, Suita, and Masaki Aoki, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Limited, Osaka, Japan

Filed Feb. 16, 1973, Ser. No. 332,791
Int. Cl. H01c *7/00, 17/00*
U.S. Cl. 29—620 **15 Claims**



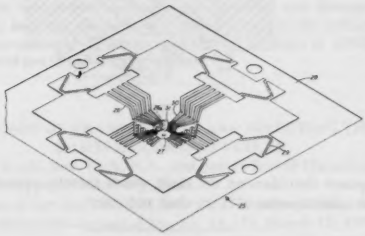
This disclosure provides a method for making a resistor comprising at least one resistor film and electrode films adhered to the inside surface of a hollow substrate such as one having a cylindrical form. The method includes attaching a flexible transfer film having resistor and electrode pastes thereon to the inside surface of the substrate and burning out the transfer film so as to fix the pastes onto the inside surface as films. The method, therefore, is very easy to carry out and makes it possible to obtain a desired pattern of resistor film or films easily.

3,803,709

TEST PROBE FOR INTEGRATED CIRCUIT CHIPS

Richard K. Beltz, Hamburg, and Jerry C. Hurst, Reading, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,043
Int. Cl. H05k *3/00*
U.S. Cl. 29—624 **11 Claims**



A test probe for semiconductor chips is made, starting with a generally flat array of converging sets of leads, whose outer ends are attached to a frame via expansion elements and whose inner ends are attached to each other. In this lead array, there is formed a pyramidal protrusion consisting of the attached inner ends and the portions of the leads nearest thereto. Other lead portions are then embedded in the surface of a plastic frame. Next, the outer ends of the leads are severed from the expansion elements, and the inner ends are severed from each other. The outer lead ends constitute the contacts between the probe and associated external test equipment, while the pyramidally protruding inner lead ends constitute the probe fingers for contacting the semiconductor chips.

Preferably, a second protrusion, which provides a pedestal for the pyramidal protrusion, is also formed in the lead array. In that case, lead portions forming the pedestal are also embedded in the plastic frame surface.

The lead displacements involved in forming the two protrusions are accompanied by compensating movements of the expansion elements, thereby preventing stretching of the leads themselves.

3,803,710

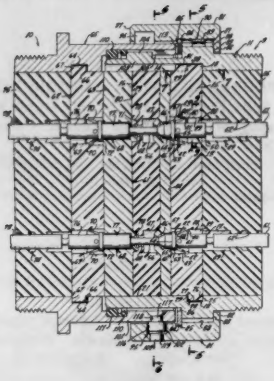
METHOD FOR RETAINING AN ELECTRICAL CONNECTOR INSERT

Kenneth M. Clark, Beaumont, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Division of Ser. No. 167,317, July 29, 1971, Pat. No. 3,727,172, which is a continuation-in-part of Ser. No. 83,782, Oct. 26, 1970, abandoned. This application Apr. 4, 1973, Ser. No. 347,801
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 **6 Claims**

The insert of an electrical connector is held in the shell by forming outwardly projecting lugs on the insert that are rear-

wardly moved through longitudinal slots formed in the shell, followed by rotation of the insert to position the lugs between



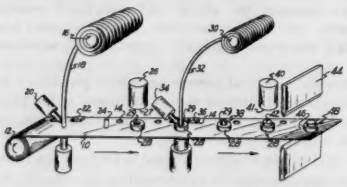
opposed shoulders on the shell, which thereby prevents relative axial movement of the shell and insert.

3,803,711

ELECTRICAL CONTACT AND METHOD OF FABRICATION

Rene A. Dubuc, Attleboro; Sheldon S. White, Brookline, and Joseph A. Willoughby, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 112,534, Feb. 4, 1971, Pat. No. 3,686,457.
This application Mar. 27, 1972, Ser. No. 238,607
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 C **7 Claims**



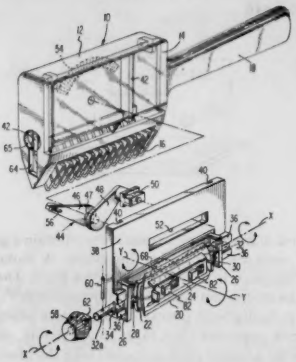
An improved electrical contact is disclosed including a heat sink layer secured to a substrate and an electrical contact layer secured to a surface of the heat sink layer. The heat sink layer and the contact layer are each of a generally nonuniform cross-section, including respective central portions of differing thicknesses with respect to the peripheries thereof disposed in mating relationship, with the contact layer terminating spaced inwardly from the periphery of the heat sink layer. In fabrication of the electrical contact the heat sink layer is deposited on the substrate and deformed to include a central portion of decreased thickness, while the contact layer is secured to the surface of the heat sink layer and similarly deformed to include a central portion of an increased thickness in mating relationship with the central portion of the heat sink layer and terminating spaced inwardly from the periphery of the heat sink layer.

3,803,712

HAIR CUTTERS FEATURING ROTATABLE BLADE

Abram Nathaniel Spanel, 344 Stockton St., Princeton, N.J.

Filed Jan. 5, 1973, Ser. No. 321,342
Int. Cl. B26b *21/18*
U.S. Cl. 30—30 **21 Claims**



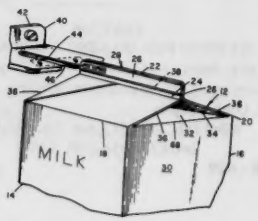
Improved hair cutter devices which are adapted for home use and which are designed to enable a double-edge blade of the razor variety to be rotatable within the device to provide readily accessible use of both blade edges, the device being provided with one set of tines into which a selected blade cutting edge may be projected in variable adjustable positions for hair cutting. In the preferred embodiments, the blade may be unobstructedly rotated either about its center point within its own plane or about its long axis while said blade is within the compartment preparatory to adjusting the blade to selected cutting positions.

3,803,713

CARTON OPENING CUTTER

Frank W. Jones, and James D. Lemmon, both of R.D. No. 2, Littlestown, Pa.

Filed Nov. 26, 1971, Ser. No. 202,297
Int. Cl. B26b *3/00*
U.S. Cl. 30—123 R **2 Claims**



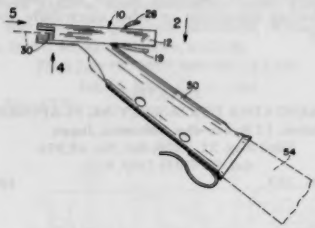
A cutter for opening cartons of the type in popular use which are formed from paper stock, the sides of which at the top are folded together to close the carton and incidentally form inwardly folded panels which, after opening the top, are folded outwardly to form a pouring spout. The cutter comprises a blade having a cutting edge extending across the slot, the slot guiding the sealed flange at the top of the carton to and past the blade to slit said flange for a length adequate to expose the spout-forming panels and the inner end of the slot forms a stop to limit the length of the slit to expose the spout-forming panels but otherwise retain the top structure in condition to be closed after the pouring operation.

3,803,714

POLE BLADE SCRAPER

George Lachowetz, 29 Ridge Ave., Athol, Mass.

Filed Oct. 18, 1972, Ser. No. 298,669
Int. Cl. B26b *3/00*
U.S. Cl. 30—171 4 Claims



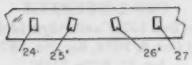
A blade scraper comprising a removable and replaceable scraper, a housing therefor, said housing being permanently mounted on a handle located at an angle thereto for easy manipulation of the scraper, said handle comprising a tapering split holder for attachment to the end of a removable pole for scraping at an elevation without the use of a ladder, etc.

3,803,715

ELASTIC ORTHODONTIC BAND AND METHOD OF FORMING THE SAME

Melvin Wallshein, 8645 Bay Pky., Brooklyn, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,572
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A 17 Claims



An orthodontic band for use with orthodontic arch brackets is disclosed which comprises an elongated substantially flat strip of elastic material. The band is suitable for use for moving misaligned teeth from an actual to a desired position. The elastic strip is provided with a plurality of elongated apertures each of which is positioned in the region of a respective bracket — the strip engaging the bracket by passage of the latter through the apertures. The apertures are movable from a first position or an angular orientation in which at least a portion of the elastic strip is under tension to a second position in which the elastic strip is free of tension. The apertures are so arranged and positioned on the strip so that when the apertures are placed in a first position while associated with a respective bracket, tension is applied to the bracket and the band urges the tooth to move towards its desired position. A method of preparing the orthodontic band is described.

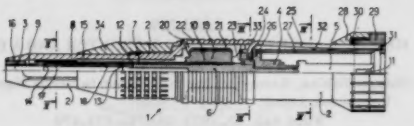
3,803,716

HANDPIECES FOR DENTAL SURGERY AND THE LIKE

Marcel Garnier, Besancon, France, assignor to Micro Mega S.A., Besancon, France

Filed Apr. 14, 1972, Ser. No. 244,017
Claims priority, application Japan, Apr. 13, 1971, 46-14038; Mar. 2, 1972, 47-07285
Int. Cl. A61c *1/08*
U.S. Cl. 32—26 8 Claims

A dental surgery handpiece for interchangeable rotatable tools includes a chuck accessible through an open end of a tubular support, opening and closing of the chuck being controlled by rotation of an actuating ring inside the support and accessible through openings therein. The chuck is mounted on a driving shaft, the chuck/shaft assembly being freely rotatable when a locking pin assumes a disengaged position and part of the chuck/shaft assembly being locked against rotation to enable operation of the actuating ring when said pin assumes a locking position. A sleeve slidably mounted on the support between two positions closes said openings and disengages said pin in a first position, and allows access to the actuating ring through said openings in a second position in which it holds said pin in its locking position.

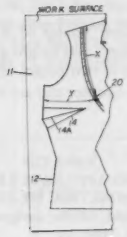


3,803,717

METHOD OF TRANSFERRING AND DIRECTING THE DARTS IN A DRESS PATTERN

Dusan Mrak, New York, N.Y., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Division of Ser. No. 110,555, Jan. 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 18,252, March 10, 1970, abandoned. This application Aug. 24, 1972, Ser. No. 283,381
Int. Cl. A41h *3/00*
U.S. Cl. 33—17 R 4 Claims



A method or system of relocating the darts of a dress pattern is disclosed so that the darts in the finished dress will always point to the highest point, or apex, of a body curve, as for example the bust, hips, etc.

3,803,718

MEASURING INSTRUMENT

Thomas A. Schneider, Lombard, Ill., assignor to House of Doors, Inc., Brookfield, Ill.

Filed Nov. 15, 1971, Ser. No. 198,540
Int. Cl. G01b *3/04*
U.S. Cl. 33—107 R 1 Claim

A measuring instrument for determining the size of wire forming a helically wound spring. The measuring instrument

includes a thin, flat, elongated body which has marking indicia on its outer surface. A hook is formed integral with one end of the body and is substantially perpendicular to the inner surface of the body. The marking indicia is calibrated in cooperation with the hook to indicate wire size when a selected number of coils of a helically wound spring is compressed against the hook.

3,803,719

HEIGHT GAUGE COMPRISING A COUNTER AND A DIAL GAUGE

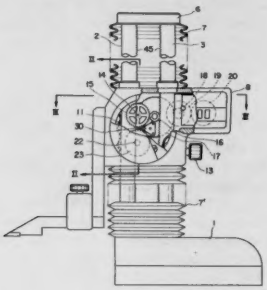
Shingo Nishina, Kawasaki, Japan, assignor to Yehan Numata, Yokohama, Japan

Filed Aug. 13, 1971, Ser. No. 171,470

Claims priority, application Japan, Dec. 30, 1970, 45-139902

Int. Cl. G01b *5/00*

U.S. Cl. 33—172 R **4 Claims**



The present invention relates to a height gauge with a counter and a dial gauge, said height gauge comprising face-to-face racks attached to two pillars, and pinions which drive the dial gauge and the counter and are mounted on a slider engaging said racks.

3,803,720

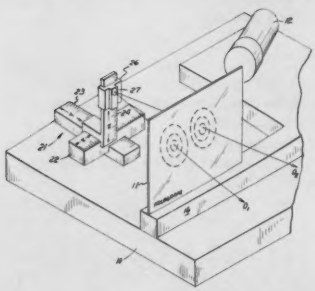
METHOD AND APPARATUS FOR MAKING HOLOGRAMMETRIC MEASUREMENTS

Uuno Helava, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 27, 1971, Ser. No. 184,152

Int. Cl. G01c *11/00*; G01b *11/14*

U.S. Cl. 33—228 **12 Claims**



A system employing the principles of holography in making accurate measurements of objects is described. The system includes a holographic reconstruction means, an image viewing means, an object point selection means, and coordinate position determining means. The hologram is stationarily positioned, and specific selected points on the image are viewed with the object point selection means aimed at the selected points. Spatial position measurements are made with respect to each selected point and the measurements used to calculate the exact relative positions of the points. The measurements can be converted to electrical signals and used to drive graphic plotting equipment or other electrically controlled equipment.

3,803,721

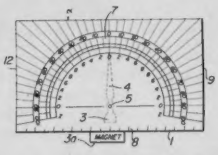
GRADUATOR FOR SURVEYING PURPOSES

Atsushi Matsui, 12 Baban-cho, Shizuoka, Japan

Filed Aug. 21, 1970, Ser. No. 65,991

Int. Cl. G01c *1/00, 9/12*

U.S. Cl. 33—283 **10 Claims**



A surveying graduator comprising a box-shaped body of transparent material and having a decimal reference scale thereon in basic length of 100 mm and a rotable index pivotally mounted in the interior of the body. The body includes angle and gradient graduations cooperatively arranged with respect to the index and a sliding rule displaceably mounted in a lateral side of the body for movement in a direction perpendicular to the reference scale.

3,803,722

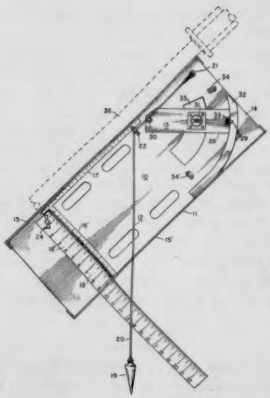
DRILLING GAUGE

Lester W. Hinkley, Box 102, Cambridge, Idaho

Filed Oct. 8, 1971, Ser. No. 187,727

Int. Cl. B27g *23/00*

U.S. Cl. 33—353 **4 Claims**



The present invention comprises: a body portion having a terminal side operable as a reference side for contacting drill bits; a plumb bob assembly suitably anchored to the body portion, having a plumb bob and string; a co-ordinate reference including a suitably divided abscissa scale disposed parallel to the reference side of the body portion, and an ordinate scale

disposed perpendicularly to the reference abscissa scale and suitably fastened to the body portion; and a pivotally mounted level suitably secured on the body portion.

3,803,723

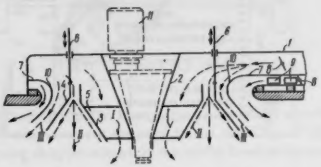
DEVICE FOR INTRODUCING A GASEOUS AGENT

Eduard Lvovich Lamm, ulitsa Konstantinova, 5, kv. 39; Galina Vasilieva Kljueva, novo-petrovskaya ulitsa, korpus 4, kv. 104, and Boris Grigorievich Shteinfeld, Nizhegorodskaya ulitsa, Ia, kv. 50, all of Moscow, U.S.S.R.

Filed July 15, 1971, Ser. No. 162,796

Int. Cl. F26b *17/10, 3/08*

U.S. Cl. 34—57 R **3 Claims**



A device comprising a duct divided by a horizontal partition into channels, one of the channels accommodating, in the part thereof directed towards a spray dryer, the nozzles. The nozzles are cylindrical in shape in the zone of drying agent entry therein, while in the zone of drying agent exit therefrom a portion of the nozzles is inclined in relation to the generatrix of the cylinder. One nozzle is adapted to be displaced.

3,803,724

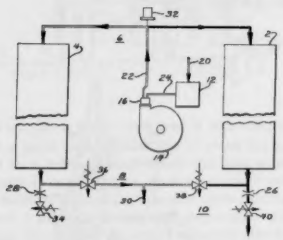
BY-PASS VALVE FOR A GAS DRYER

Norbert S. Bombich, Pittsburgh, Pa., assignor to Ajax Magnethermic Corporation, Warren, Ohio

Filed Aug. 16, 1972, Ser. No. 281,031

Int. Cl. F26b *21/06*

U.S. Cl. 34—80 **4 Claims**



A by-pass valve for a gas drying system is mounted on a blower for flowing gas through the system. The by-pass valve comprises an inlet aligned with the inlet of the blower, an outlet aligned with the outlet of the blower, and a by-pass port connecting the inlet and the outlet of the valve. The cross-sectional area of the by-pass port is adjustable by movement of a restricting member into and out of the port. The gas pressure at the outlet of the blower and the gas flow rate leaving the blower can be varied by adjusting the position of the restricting member in the by-pass port to divert or prevent diversion of some of the gas at the outlet of the blower. The gas thus diverted from the gas drying system is recirculated through the blower to thereby minimize additional gas required at the blower inlet to meet the gas flow requirement of the system receiving the dried gas.

3,803,725

CLOTHES DRYER WITH STARTER SAFETY SWITCH

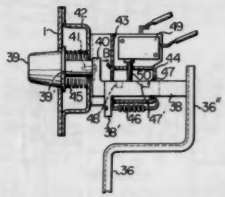
Kojiro Takeyama, Kawanishi, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sept. 8, 1972, Ser. No. 287,472

Claims priority, application Japan, Oct. 29, 1971, 46-86465

Int. Cl. F26b *11/02;* **H01h** *15/14, 13/18*

U.S. Cl. 34—133 **2 Claims**



A clothes dryer includes a rotatable drum having an access door and a starting switch adapted to be closed when the door is closed and a manual push bottom is actuated, so that even when a little child enters the drum and closes the door the dryer is not started. The improvement resides in a simple mechanism without any complicated electrical parts such as a relay for ensuring the safety of operation.

3,803,726

CONVECTION DRIER WITH A TRAVELLING BED

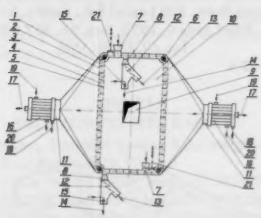
Jerzy Pikon, Aleja onajowa 14/27; Piotr Wasilewski, Karolinki Str. 25, both of Gliwice, and Boleslaw Mitka, Swidnicka Str. 38/17, Katowice-Ligota, all of Poland

Filed Feb. 28, 1973, Ser. No. 336,761

Claims priority, application Poland, Mar. 6, 1972, 153878; Apr. 20, 1972, 154865; May 30, 1972, 155683

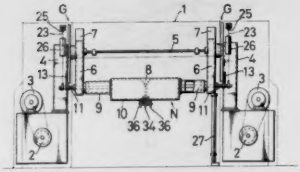
Int. Cl. F26b *19/00*

U.S. Cl. 34—203 **6 Claims**



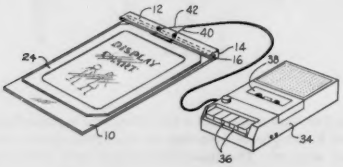
A convection drier with a travelling bed is provided for drying and heating bulk materials such as coal, quick coke, blast furnace slag etc. The fundamental principle of its operation consists in blowing through a layer of dried material which is continuously travelling. A stream of a drying agent/hot air or combustion gases/ is passed through a bed of dried material blowing upon the particular particles of this material and removing moisture therefrom. Owing to the fact that the drying agent is passed in variable directions, a good turbulence of air flow as well as a high heat exchange can be obtained. The dried bed is passed between two perforated walls by means of a chain conveyor or falls sliding down by itself due to the force of gravity. The overall dimensions of the drier of the invention are far smaller than those ones of conventional driers. The drier can be adapted to drying bulk materials in large quantities and requires only small power supplies. The gas/even polluted combustion gases/ used in the drying process is preliminary cleaned in the drier for further use.

3,803,727
VEHICLE DRYING APPARATUS
Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan
Filed Feb. 1, 1973, Ser. No. 328,660
Claims priority, application Japan, May 30, 1972, 47-52927
Int. Cl. F26b *19/00*
U.S. Cl. 34—229 **5 Claims**



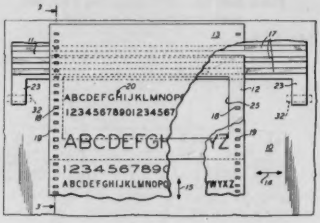
A vehicle drying apparatus of the type through which a vehicle to be dried progresses and provided with air nozzle means adapted not only to be moved vertically in accordance with the dimensions of the vehicle but also to keep the air blasts at all times substantially normal to the contour of the vehicle and air conducting means of rigid construction arranged between said air nozzle means and a source of compressed air.

3,803,728
AUDIO VISUAL EDUCATIONAL DEVICE
William Wayne Scott, 300 Laurel Rd., Easley, S.C.
Filed June 6, 1973, Ser. No. 367,637
Int. Cl. G09b *5/06*
U.S. Cl. 35—8 A **4 Claims**



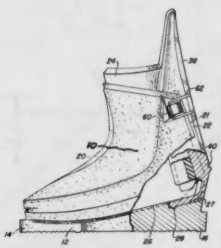
An educational device for co-ordinating printed information on a chart with an audio recording. The device includes a rigid transparent board upon which a chart is placed. Spring biased electrically conductive members engage a piece of conductive taper carried on the chart to close a circuit for turning on a tape recorder. When the chart is removed from the rigid board the recorder is turned off. The rigid board and chart are transparent so that the printed information carried thereon can be projected onto a screen by a conventional projector.

3,803,729
REGISTER-TYPE DEVICE FOR USE IN FORMING INDICIA ON A LAYOUT SHEET FROM AN INDICIA SHEET
Andrew J. Acerra, 104 Park St., West Caldwell, N.J.
Filed Mar. 8, 1972, Ser. No. 232,888
Int. Cl. G09b *15/06*
U.S. Cl. 35—26 **2 Claims**



A pin register-type device for forming indicia on a layout sheet from an indicia sheet, for media reproduction purposes, comprising a slide bar to be secured to the layout sheet, a register frame for slidable engagement with the slide bar for guiding the register frame, in a longitudinal direction, along the slide bar, to a predetermined desired position, and complementary means on the register frame and indicia sheet for adjustably positioning the indicia sheet on the register frame in a lateral direction.

3,803,730
SKI BOOT WITH INTERCHANGEABLE BACK
Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries, Inc., Boulder, Colo.
Filed Mar. 6, 1972, Ser. No. 231,967
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **29 Claims**



A ski boot having a rear closure, said boot being adapted to use either a normal height rear tongue member or a "high-rise" tongue member. The rear tongue member is held in the closed position by a securing clamp means made up of a cable and a buckle, which permits the boot to be easily opened. In the closed position, the rear tongue member preferably causes a forward lean of the skier's leg, but by unbuckling the cable, the skier's leg is permitted to flex upright. The position of the tongue member closure can be varied widely by using cables of various lengths in the securing means.

3,803,731

SHOES

Ray H. Zumbro, 110 Hillside Rd., Farmingdale, Long Island, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,400
Int. Cl. A43b *23/00*
U.S. Cl. 36—57 5 Claims

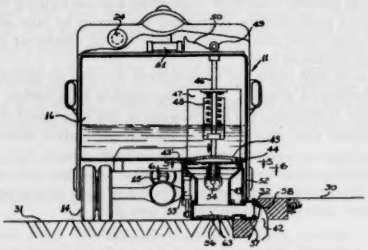
Shoes including a collar comprising a specially constructed foam cushioning element secured to the top edge of the shoe upper opening at approximately the ankle level of the wearer's leg.

3,803,732

SNOW-MELTING TRUCK WITH DISCHARGE MEANS

Angel Moreno, 5530 Cote St., St. Luc Rd., Montreal, Quebec, Canada

Filed Feb. 23, 1973, Ser. No. 335,096
Int. Cl. E01h *5/10*; E03b *11/00*
U.S. Cl. 37—12 9 Claims



A vehicle carries a water tank and is provided at the front thereof with a snow pick-up unit. Snow from the pick-up unit is conveyed to a melting unit which delivers water into the tank. The tank is equipped to discharge water into a sewer, selectively through a downflow nozzle communicable with a manhole, and a sideflow nozzle communicable with a lateral curb opening. Means are provided whereby the discharge of water is maintained when the vehicle is travelling down an incline.

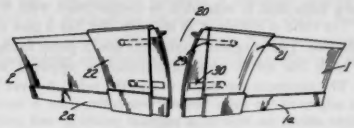
3,803,733

CONVERTIBLE SNOW PLOW WITH SLIDABLE CLOSING WINGS

Ralph Ramsey, c/o Burch Corporation, 927 Clink Blvd., Crestline, Ohio

Filed Oct. 5, 1972, Ser. No. 295,259
Int. Cl. E01h *5/04*
U.S. Cl. 37—44 6 Claims

This disclosure is of a moldboard type of plow, more particularly for snow removal, wherein the moldboard is comprised of a pair of wings mounted on a frame to be connected to a vehicle, whereby the wings may swing as a unit around a central point so as to direct the material being plowed to one side or the other of a vehicle, or push such material straight ahead, and alternatively position the wings to cause the movement of the material to opposite sides of the vehicle, simultaneously or separately and in this latter position certain



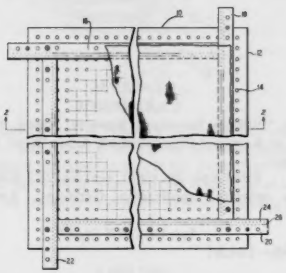
means to close the gap created in the V-position are provided, which means are movable into and out of position for that purpose, suitable operating means being provided therefor.

3,803,734

NEEDLEPOINT BLOCKING DEVICE

Evan Juro, 1601 Arthur Ave., North Brunswick, N.J.

Filed Nov. 14, 1972, Ser. No. 306,280
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.5 11 Claims



A blocking device having a base member and a plurality of gripping members form a closed figure of variable dimension having the gripping members formed in one or more parallel rows of outwardly extending members.

3,803,735

ESCAPEMENT MECHANISM

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.

Division of Ser. No. 122,471, March 9, 1971, Pat. No. 3,698,252. This application June 23, 1972, Ser. No. 265,950. The portion of the term of this patent subsequent to Oct. 17, 1989, has been disclaimed.
Int. Cl. G09f *11/00*
U.S. Cl. 40—28 R 15 Claims

A driven mobile having a plug secured to a first shaft with a plurality of arms radially extending from the plug. Objects of

interest are secured to each arm and means is provided for allowing each object to oscillate about the arm to which it is attached as said first shaft is rotated. A spring motor is provided for supplying energy for rotating the first shaft. An escapement mechanism controls the rotation of the first shaft and includes a tube that is rotatable in conjunction with the first shaft. The tube is enclosed at its ends and has a pair of magnets therein. The magnets have their south poles facing each other with the north poles diametrically opposed to each other. The magnets can move within the tube. A lever is positioned adjacent the tube bottom when the tube is vertical, is rotatable about an axis to a vertical position and includes a stop. The stop prevents rotation of the tube when the lever is in the vertical position. A magnetic means biases the lever to the vertical position. If the tube is in a vertical position with the magnets therein at the top of the tube, the lever will be in a vertical position as a result of the magnetic biasing means and the stop will prevent rotation of the tube. The magnets in the tube will descend to the bottom of the tube under the influence of gravity and the bottommost magnet overcomes the magnetic biasing means and any frictional forces and causes the lever to be moved out of its vertical position. Consequently, the tube and first shaft are free to rotate. After the tube is rotated a few degrees, the magnetic biasing means then moves the lever to a vertical position and the cycle is again repeated after the tube has come to a vertical position.

3,803,736

CARD INDEX

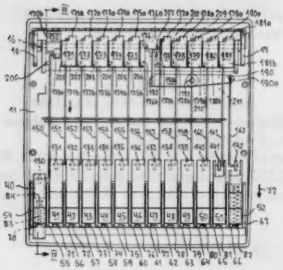
Wolfgang Wilhelm Bernhard Kramer, Essen, Germany, assignor to Kommanditgesellschaft Arlac-Werk Heiko Ippen, Germany

Filed Apr. 26, 1972, Ser. No. 247,520

Claims priority, application Germany, Apr. 1, 1972, 2216016

Int. Cl. G09f *11/00*

U.S. Cl. 40—104.01 **3 Claims**



A card index comprising a case with a stack of index cards covered by a pivotably mounted cover member. A set of selector keys are adapted to swing the cover and with it one or several cards upwardly into a substantially vertical viewing position. Each selector key is slidably movable along an upper case surface and is coupled by a link mechanism to an associated rocking lever. The rocking levers are adapted to swing the cover member and with it a selected number of index cards having suitable recesses upwardly into the viewing position. A similarly arranged locking key serves to return the cover member and the index cards into the closed rest position of the card index.

3,803,737

DECORATIVE BACK-LIGHTED SLIDE VIEWING FRAME

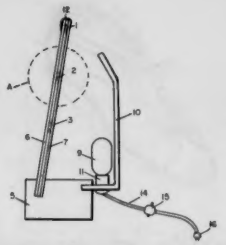
Earl D. W. Beckett, 12154 Richer Blvd., Pierrefonds, Quebec, Canada

Filed Dec. 2, 1971, Ser. No. 204,220

Claims priority, application Canada, Dec. 9, 1970, 100243

Int. Cl. G09f *13/10*

U.S. Cl. 40—106.1 **3 Claims**



A frame, consisting of two plates (one transparent and one translucent) which serve to sandwich slides between them and which are held apart by tracks spaced such that slides can be easily inserted. The frame provides a means of exhibiting a number of slides in a decorative and pleasing fashion for any length of time while affording protection to the slides from dust, scratches and finger marks. A mask is inserted between the plates in contact with the translucent plate for the purpose of preventing unseemly and glaring light from being seen around the edges of the slides. Unlike other back-lighted devices the back surface of the translucent plate is not enclosed and the attached light unit is designed to interfere as little as possible with light from other sources striking the translucent plate thereby permitting the device to take advantage of other light sources (window or lamp) whenever they provide sufficient light.

Although there are back-lighted devices for sorting slides, illuminated displays, and photographic light-tables, none of these is intended for the viewing of one's personal slides in a manner that provides a permanent decorative effect. There are slide viewers which magnify as well as back-light personal slides but which permit the viewing of only one slide at a time.

The frame can be manufactured in such proportions as to show slides of any number or any size.

3,803,738

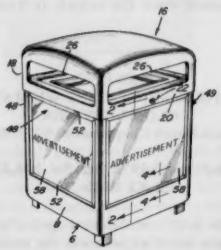
ADVERTISING FRAME FOR USE ON A WASTE RECEPTACLE

Sam Weiss, Pottsville, Pa., assignor to United Metal Receptacle Corporation, Pottsville, Pa.

Filed Sept. 22, 1972, Ser. No. 291,343

Int. Cl. G09f *23/00*

U.S. Cl. 40—306 **6 Claims**



A readily attachable and changeable outdoor advertising sign and a complemental relatively stationary but portable

support therefor. The sign comprises a metal picture-type frame. The inner perimeter surfaces of the frame members are E-shaped and provide inward and outward seating channels. The outward channel portions receive and retain the gasket-equipped sealing and weatherproofing edges of a transparent window while the inward channel portions seat and removably retain the marginal edges of a changeable sign, an attractive display-type placard. This composite eye appealing sign is removably but retentively housed and keyed in track portions of a receiver, more particularly, an oriented and coordinating receiver which is recessed in a vertical wall portion of a decorative-type outdoors support, more particularly, a solid waste container or receptacle. This receptacle is preferably of a type which lends itself to litter collecting use on city streets, in keeping with environmental services recommendations.

3,803,739

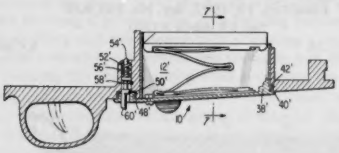
MAGAZINE KIT FOR REPEATING RIFLES

David E. Haines, Fort Ashby, and James D. Troutman, Keyser, both of W. Va., assignors to said Troutman, by said Haines

Filed July 28, 1972, Ser. No. 276,049

Int. Cl. F41c *25/00, 25/02*

U.S. Cl. 42—6 **3 Claims**



A magazine kit for rifles which comprises a magazine readily inserted into and removed from the magazine chamber comprised of a rectangular cartridge housing and means for urging the cartridges outwardly therefrom. The machine is provided with a floor plate having lips at each end thereof adapted to engage grooves in the rifle body to maintain the housing within the magazine chamber and latch means which is readily installed in the rifle without modification of the rifle.

3,803,740

COCKING AND EJECTION MECHANISM FOR FIREARMS

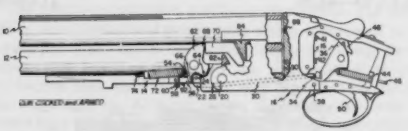
Jean Paul Jules Martial, Haccourt, Belgium, assignor to Fabrique Nationale Herstal S.A. en abrege FN, Herstal-Lez-Liege, Belgium

Filed Jan. 8, 1973, Ser. No. 321,716

Claims priority, application Belgium, Jan. 14, 1972, 778025

Int. Cl. F41c *15/06*

U.S. Cl. 42—48 **11 Claims**



A cocking and ejection mechanism for use on multibarreled shotguns wherein the forearm bracket and the receiver are pivotally joined. The mechanism includes a spring-loaded percussion hammer held in a cocked position by a sear, both of which are pivotally mounted to the receiver. A spring biased cocking-ejecting rod capable of slidable axial movement is carried transversely within the receiver. One end of the rod is in pressured contact with the percussion hammer and the other end is contoured for mating with one end of a cocking lever that is pivotally mounted to the forearm bracket. A spring-loaded ejection hammer and a sear for holding this hammer in a cocked position are pivotally mounted to the forearm bracket. As the ejection hammer sear is displaced by the cocking lever through the slidable action of the cocking-ejecting rod, the ejection hammer is released striking a lug mounted to a mechanism for ejecting spent shells. With the above cocking and ejection mechanism, fewer precision parts and adjustments are required during its manufacture and assembly.

3,803,741

SAFETY DEVICE FOR A CYLINDER REVOLVER

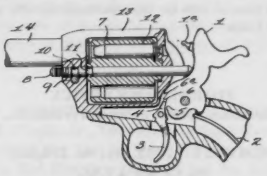
Rene Albert Ducommun, Staufen, Switzerland, assignor to International Armament Corporation, Alexandria, Va.

Filed Jan. 3, 1973, Ser. No. 320,766

Claims priority, application Switzerland, June 27, 1972, 9654/72

Int. Cl. F41c *17/04, 1/00*

U.S. Cl. 42—66 **2 Claims**



A safety device for a revolver wherein the cylinder is mounted on a pin which is selectably movable along its axis from a first fixed position at which the pin is free of engagement with the hammer to a second fixed position at which the pin engages the hammer to prevent it from reaching the firing position.

3,803,742

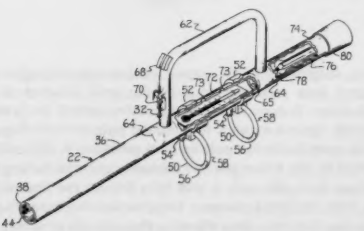
MULTIPLE PURPOSE GAME FISH LANDING EQUIPMENT

Ray W Foster, 20849 N.E. 116th, Redmond, Wash.

Filed Oct. 9, 1970, Ser. No. 79,460

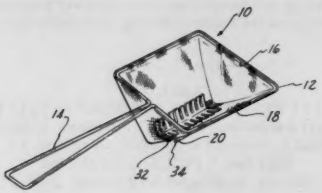
Int. Cl. A01k *77/00, 97/14*

U.S. Cl. 43—4 **1 Claim**



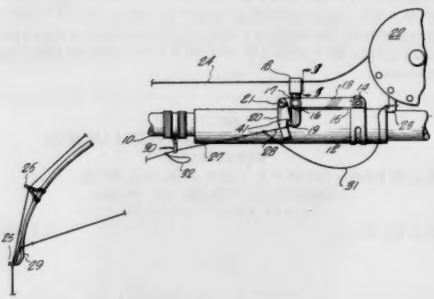
In respective embodiments, a gaff hook or a landing net is secured, often removably, to one end of an elongated body which may also serve: as a handle or to support a handle; as a container to receive items used while fishing; as a ruler for measuring the length of fish caught; as a support and receiver of fish gripping devices used in carrying fish; as a support and/or container for a weighing scale; as a mounting place for magnets to hold fish hooks, for a sharpening stone to sharpen fish hooks, and for a cleaning knife, all of which are mounted on a carrying handle which is secured to the elongated body or all or some are mounted directly on the elongated body of the gaff hook and/or the landing net.

3,803,743
MINNOW DIPPER
Walter H. Nalepka, 33648 Michele St., Livonia, Mich.
Filed June 16, 1972, Ser. No. 263,666
Int. Cl. A01k *69/00*
U.S. Cl. 43—4 **4 Claims**



A minnow dipper having a net for removing a minnow from a container and a holder carried by the net for supporting the minnow such that it can be manipulated by the user for attachment to a hook.

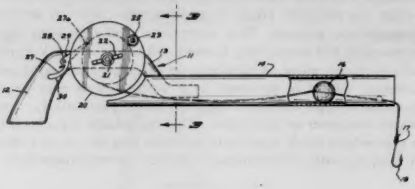
3,803,744
FISHING POLE DEVICE
Philip C. de Beixedon, 213 W. Canon Perdido St., Santa Barbara, Calif.
Filed Oct. 11, 1972, Ser. No. 296,665
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **8 Claims**



An automatic hook setting device comprising a pair of pivoted jaws mounted on a fishing pole adapted to engage each other. A tension line is secured to one of the jaws and to the pole tip in a manner to bend the pole and the engagement of the jaws holds the pole in bent position. A slotted block is carried by the other jaw to releasably grip the fishing line extending from the reel. A pull by a fish on the line causes the jaw with the block thereon to pivot and become disengaged from the first jaw, thus allowing the pole tip to spring up and hook the fish.

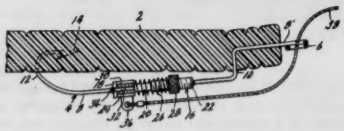
3,803,745
FISHING ROD AND REEL
Francis A. Freihammer, St. Cloud, Minn., assignor to John T. Burns, St. Cloud, Minn., a part interest
Filed June 23, 1972, Ser. No. 265,723
Int. Cl. A01k *89/00*
U.S. Cl. 43—20 **7 Claims**

A fishing rod and reel having a line spool on a spindle attached at one end of the spool directly to the handle, the rod being tubular and of sufficient interior size as to receive and pass the line, bobber, sinker and hook or lure for winding directly on the reel, the tubular rod being aligned with the



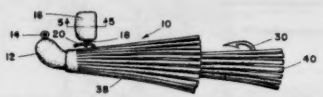
periphery of the reel, and a spring pressed guide on the handle and bearing against the periphery of the reel spool to restrict rotation of the spool in one direction.

3,803,746
FISHING LURE
Royal W. Riggs, 2406 Albert Lee, Sedalia, Mo.
Filed Oct. 10, 1972, Ser. No. 295,935
Int. Cl. A01k *83/00*
U.S. Cl. 43—35 **6 Claims**



A fishing lure consisting of a soft lure body adapted to be attached to a fishing line, a pair of fishhooks spring-urged from a closely adjacent retracted position in which their points are shielded against the lure body so that they cannot catch on weeds, to a more distant extended position spaced apart from the lure body to assist in setting them in a fish's mouth, a latch holding the hooks in their retracted position, and a latch release operable by variable tension on the line to release the latch.

3,803,747
FISHING LURE
Earl Cartwright, 86 House Dr., Akron, Ohio
Filed Mar. 31, 1972, Ser. No. 240,120
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.28 **11 Claims**



A lure for fishing on stream and lake bottoms. The lure has a weighted body, a cork or other freely slidable buoyant member pivotally attached to the body near the rear thereof, and a hook attached by a swivel connection at the rear of the body. Slit rubber skirting, feathers or other dressings may be attached to the body.

3,803,748
SPRING-LOADED DOUBLE-ACTING FISHHOOK

Julian E. Neal, Mansfield, La., assignor to Fred Mitchell, Robeline, La., a part interest

Filed Mar. 9, 1973, Ser. No. 339,948
Int. Cl. A01k *83/02*
U.S. Cl. 43—36 **4 Claims**

A spring-loaded double-acting fishhook characterized by companion main and auxiliary fishhook units. The median portion of the shank of the main unit is provided with a lateral bend defining a journal. The coordinating median portion of the auxiliary unit has aligned coils providing a bearing for the journal whereby to assemble and pivotally join the two units. A V-spring has aligned spring coils encircling the first-named coils, and legs diverging therefrom and provided with terminal eyes which surround and are joined to oriented shank portions of the units in a manner to close the barb-equipped hooks in compactly nestled weedless relationship. These hooks spring open and trap the fish when a proper tug on the line is initiated by the fish.

3,803,749
SINKER DEVICE

Norman B. Boyum, Battle Lake, Minn.

Continuation-in-part of Ser. No. 120,182, March 2, 1971, abandoned. This application Sept. 13, 1972, Ser. No. 288,745
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.9 **2 Claims**

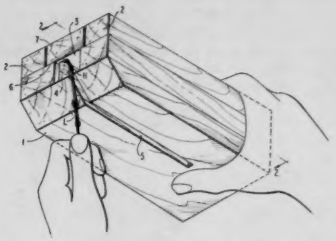
The invention comprises a sliding sinker device. The sliding sinker has a cylindrical plastic tube which is mounted to the fishing line with a center bore sufficiently large enough for the tube to slide freely on the fishing line. A plurality of detachable weights each has a center bore with a longitudinal slot into the weights to the bore for sliding the fishing line into the center bore of the weight, whereupon the tube may be slid into the bore of the weight to operatively attach the sliding sinker to the fishing line.

3,803,750
HOLDER FOR TROTLINE FISHHOOKS

Dan Nunley, 4285 Bonham, Odessa, Tex.

Filed Feb. 1, 1973, Ser. No. 328,545
Int. Cl. A01k *97/06*
U.S. Cl. 43—54.5 A **10 Claims**

A holder for trotline fishhooks in the form of an elongated case with a rib on the bottom thereof midway between the opposite sides as a support for a row of fishhooks on the line. The shanks of the hooks extend through a slot in the bottom of the case at one side of the rib. A cover closes the top of the case,

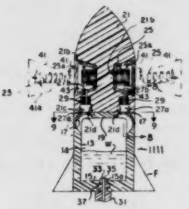


seated on shoulders at the sides, and has a pin member to overlap the row of hooks to prevent them from being displaced lengthwise of the rib when the cover is closed.

3,803,751
PROPELLED TOY ARRANGEMENT

Reginald F. Pippin, Jr., 7806 Ruxway Road, Towson, Md.

Division of Ser. No. 36,120, May 11, 1970, which is a division of Ser. No. 504,299, Oct. 24, 1965, Pat. No. 3,510,980. This application Feb. 22, 1972, Ser. No. 228,279. The portion of the term of this patent subsequent to May 12, 1989, has been disclaimed.
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 B **12 Claims**



A missile arrangement including a self-propelled missile unit and one or more releasably held secondary units releasable from their held condition, the self-propelled missile unit having a fluid discharge orifice and a pressurizable substantially fluid tight fluid-pressure-responsively movable retention and release wall, which enables retention and release of the separable unit by respectively fluid-pressurizing and depressurizing the self-propelled unit. A spring opposes pressure-responsive retention movement of the wall and resiliently urges the wall toward a release position. Several embodiments of a preferred spring-biased fluid pressure responsive movable retention and release wall are illustrated, in the form of a flexible diaphragm retention and release wall.

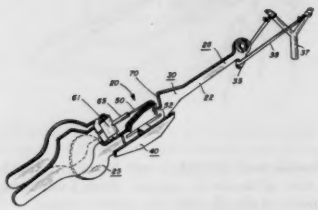
3,803,752
TOY HELICOPTER OR THE LIKE

Robert R. Vanni, 701 Tuxedo Ave., Brooklyn Heights, Ohio

Filed June 28, 1972, Ser. No. 267,028
Int. Cl. A63h *27/12*
U.S. Cl. 46—75 **18 Claims**

The present disclosure relates to a toy helicopter construction which permits the helicopter to perform or function in a

realistic manner. The structure includes a fuselage member having front, rear and intermediate portions with a rotor shaft swingably or pivotally connected to the intermediate portion and with a rotor construction rotatably connected to the shaft. The pivotal mounting of the shaft to the intermediate portion of the fuselage enables the shaft to be swung to a position generally in line with the fuselage when catapulting the helicopter into the air. The present disclosure also discloses a rotor which is of a one piece integral plastic construction and the plastic material is flexible so that it can function in the specific manner which is disclosed. As the helicopter reaches



the top of its trajectory after having been catapulted into the air, the pivotal mounting of the rotor shaft enables the rotor shaft to assume a position generally at right angles to the extent of the fuselage, and the force of gravity causes the blades of the rotor to rotate the rotor and in their rotatative condition to assume a position approaching parallelism with the earth. After the helicopter has reached the ground on its downward flight, landing gear are provided to engage the ground. Wall means are provided at the intermediate portion of the fuselage so as to engage the rotor shaft and maintain the same in a realistic looking upright position.

3,803,753

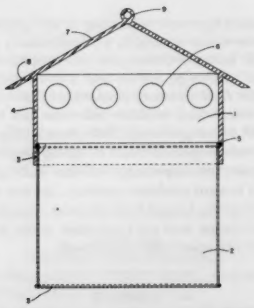
METHOD FOR CONTROLLING YELLOW JACKET POPULATIONS

Abner Oscar Feigin, Mountain Lakes; Cedric Copeland Jennings, Towaco, both of N.J.; Floyd Leroy Bailey, Jackson, Miss., and Russell Yerby Smith, Jr., Brookside, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 124,130, March 15, 1971, abandoned. This application May 25, 1973, Ser. No. 363,938

Int. Cl. A01m *01/02*

U.S. Cl. 119—131 **2 Claims**



A method for facilitating control of yellow jackets by baiting. The bait is dispensed from a container, preferably a standard can, by means of a protective feeder cover. The protective cover permits easy access for the yellow jackets but keeps birds and animals out. The bait is fish-flavored food containing dodecachlorooctahydro-1,3,4-metheno-2H-cyclobuta [cd] pentalene. The bait is used in combination with a yellow jacket attractant consisting of heptyl butyrate. The attractant is placed on absorbant material which is separately positioned in the container.

3,803,754

BLOCKS WITH NON-CIRCULAR SLITS AND FLAT CONNECTORS HAVING TRANSVERSELY BOWED MIDDLE PORTIONS

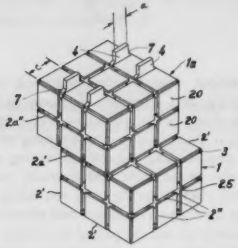
Artur Fischer, 219 Altheimer Str., 7241 Tumlingen, Germany

Filed May 2, 1972, Ser. No. 272,924

Claims priority, application Germany, June 16, 1971, 2121659; June 16, 1971, 2129762

Int. Cl. A63h *33/10*

U.S. Cl. 46—26 **16 Claims**



An assembly kit comprises a plurality of prismatic building blocks each having at least one face portion provided with a narrow elongated slit of rectilinear non-circular cross-sectional outline. A plurality of connecting elements is provided, and each comprises a pair of connecting portions complementary to said slits and having transversely bowed portions which are resiliently deformed upon insertion into the slits of registering blocks. Other connecting elements are provided combining non-circular and circular portions for connecting rotatable parts such as wheels and levers for separably but non-rotatably connecting such pairs of adjoining blocks.

3,803,755

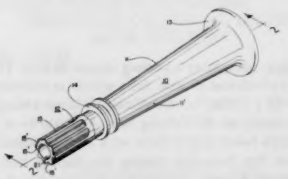
WILDLIFE CALL

Harold Thompson, P.O. Box 8002, Boise, Idaho

Filed Sept. 11, 1972, Ser. No. 287,926

Int. Cl. A63h *5/00*

U.S. Cl. 46—180 **4 Claims**



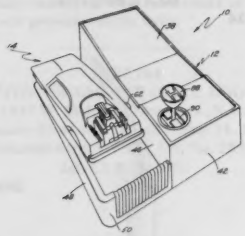
The wildlife call comprises a tapering cylindrical horn and a reed assembly including a reed cylinder being engageable with the interior of the small terminal end of the horn and being divided by a transversely disposed wall having a suitable hole, a semicircular reed block having a flat portion and a chamfer on the flat portion at one of its terminal ends, and having a rectilinearly disposed groove in the flat portion, a reed locking means and a reed. The reed locking means and reed are operable to closely, slidably engage the interior walls of the reed cylinder and to fit within the reed cylinder engaging end of the horn.

3,803,756

TOY VEHICLE AND LAUNCHING DEVICE THEREFOR

Ned S. Strongin, Baldwin, N.Y., assignor to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Feb. 8, 1973, Ser. No. 330,730
Int. Cl. A63h *29/20*
U.S. Cl. 46—202 **9 Claims**



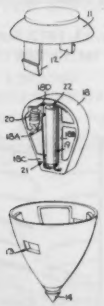
A toy vehicle and launching device therefor, that includes a platform on which the toy vehicle is received and a motor interconnected to a flywheel of the toy vehicle to a clutch member, wherein the motor rotates the flywheel while the toy vehicle is in a stationary position to store rotating inertial energy therein, the motor being disconnected from the flywheel drive, and the flywheel being simultaneously moved into engagement with the platform, wherein the rotating inertial energy stored in the flywheel causes the vehicle to be propelled forwardly from the platform at an accelerated speed.

3,803,757

ILLUMINATED SPINNING TOP HAVING REMOVABLE SUB-ASSEMBLY FOR MOUNTING BATTERY AND BULB

Ronald Sanchez, 2915 Miles Ave., Bronx, N.Y.

Filed Feb. 20, 1973, Ser. No. 334,076
Int. Cl. A63h *33/26*
U.S. Cl. 46—228 **5 Claims**



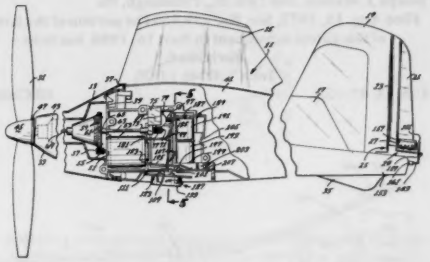
An illuminated toy spinning top having a self-contained sub-assembly which is insertable into a hollow, translucent or transparent, conical casing, the casing being enclosed by a removable cap. The sub-assembly is constituted by an open-sided frame, contoured to conform to the interior profile of the casing, the interior configuration of the frame being such as to define a socket for vertically supporting a cylindrical battery in axial alignment with the stem of the top, and another socket for supporting a light bulb upside down and in parallel relation to the battery. Connections are effected by a first contact strip which engages the lower terminal of the battery and extends into the space between the base of the bulb and the battery, and a second contact strip which interconnects the upper terminal of the battery and the center terminal of the bulb. The circuit is completed to energize the bulb when the extension of the first strip is deflected by centrifugal force to engage the base of the bulb, this force being produced only when the top is in spinning motion.

3,803,758

PROGRAMMABLE FREE-FLIGHT TOY AIRCRAFT

Richard S. Chang, Rolling Hills Estates; Denis V. Bosley, Palos Verdes Peninsula, and Manfred Roessler, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 6, 1972, Ser. No. 303,733
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 AV **5 Claims**



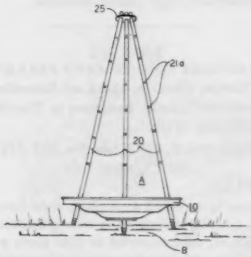
A free-flying toy aircraft is disclosed which is powered by a rechargeable, battery-driven electric motor, the motor driving both the toy's propeller and an escapement that rotates a desired one of several cams having different cam surfaces. The cam moves a follower connected to the toy's flight control surfaces whereby a predetermined course of flight of the toy aircraft may be selected by the choice of a particular cam. The cam drive mechanism continually rotates during operation of the toy's electric motor, and the cam may provide a predetermined time delay after launch before the toy's control surfaces are moved in accordance with the programmed flight path.

3,803,759

PLANT GROWTH PROMOTING AND PROTECTING DEVICE

Allen F. Heinecke, 323 Ten Allegheny Ctr., Pittsburgh, Pa.

Filed Sept. 11, 1972, Ser. No. 287,768
Int. Cl. A01g *13/02*
U.S. Cl. 47—27 **12 Claims**



A growth-promoting, protecting and supporting device has been devised for plants and particularly, for a seasonal type of plant which is to be retained in an upright position, which requires protection for starting it, or for a maximum rate of

growth or yield. The device employs a pan having a plant stem by-passing central window portion, a set of rod-like pan-spacing and supporting and area-defining legs, and a substantially cone-shaped enclosure that may be used as needed. The legs extend endwise through outer peripheral portions of the pan and have a position-supporting locking engagement with the pan when in an assembled, upwardly converging and downwardly diverging relation therewith. The pan is shaped to strengthen it, to position the enclosure and to collect and flow moisture through its central window portion about the stem of a plant. The legs serve as a growth area defining means for the plant and are also provided along their vertical extent with the tie means for branches of the plant. A removable apex connector secures the legs in their assembled relation.

3,803,760

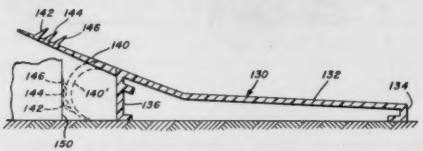
VEGETATION INHIBITING STRUCTURE

Joseph J. Matvey, 208 Orin St., Pittsburgh, Pa.

Filed Aug. 11, 1972, Ser. No. 279,958The portion of the term of this patent subsequent to Nov. 16, 1988, has been disclaimed.

Int. Cl. E04h *13/00*

U.S. Cl. 47—33 **18 Claims**



A vegetation inhibiting member for protective placement adjacent exterior wall-like surfaces. At least one guard element having an outer body portion and an inner seal portion. A plurality of guard elements may cooperate to define a closed protective frame which may be of any desired configuration. Each guard element body portion provided with an outer depending ground engaging leg and an inner depending ground engaging leg. The seal portion being formed integrally with the body portion and projecting inwardly for assuming resiliently maintained sealing contact with the wall-like surface. Hidden splice means for joining abutting edges of adjacent guard elements and corner elements which serve to define the closed frame. The seal portion may be made of a resilient plastic material and the body portion may be composed of a substantially rigid plastic material.

3,803,761

MANUFACTURE OF DORMANT PELLET SEED

Harry Watts, Sarnia, Ontario, and Kurt Schreiber, Winnipeg, Manitoba, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 5, 1972, Ser. No. 295,372

Int. Cl. A01c *1/06*

U.S. Cl. 47—57.6 **1 Claim**

This invention is directed to a plant seed having a coating thereon, said coating being of a non-elastomeric material, such as a polymer, said material in film form permitting oxygen transmission sufficient for normal respiration of the seed and having a controlled permeability to water and an elongation to breaking less than about 200 percent and said coating being of a thickness that it will control the water imbibition of the seed to the extent necessary to delay germination until environmental conditions are satisfactory to continued crop growth.

3,803,762

FLEXIBLE GLASS BODY ASSEMBLIES

Joseph A. Abeel, and Charles L. Schreiber, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 388,350, Aug. 5, 1964, abandoned, which is a continuation-in-part of Ser. No. 199,118, May 31, 1962, abandoned. This application May 23, 1966, Ser. No. 552,152

Int. Cl. B60j *1/16*

U.S. Cl. 49—34 **12 Claims**

A flexible glass body assembly embodying a flexible sheet of strengthened glass and glass sheet bending means. The flexible sheet of strengthened glass has a predetermined unstressed shape and sufficient elasticity to assume at least in part in cooperation with the sheet bending means predetermined configurations in various positions of the sheet. The bending means embody sheet edge portion engaging members disposed along at least one edge of the sheet.

3,803,763

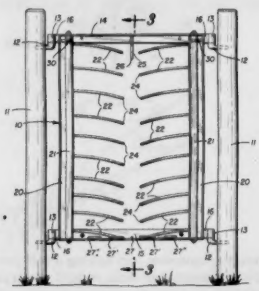
ONE-WAY DEER GATE

Dale F. Reed, Glenwood Springs, and Jerome J. Cebula, Golden, both of Colo., assignors to The State of Colorado, Department of Natural Resources, Division of Wildlife, Denver, Colo.

Filed Dec. 13, 1972, Ser. No. 314,707

Int. Cl. E06 *11/00*

U.S. Cl. 49—49 **6 Claims**



A one-way deer gate for easy passage of deer in one direction through the gate and for prevention of passage in the opposite direction comprises opposite side frame bars and upper and lower horizontal frame bars. The side bars have connected thereto a plurality of resilient spring steel tines, the tines of each side converging toward those of the other side, and extending outwardly from the gate to provide between the

tine ends a transversely narrow opening at a distance from the face of the gate. Additional tines extend outwardly from the upper and lower frame bars and limit the height of the narrow opening between the ends of the side bar tines. The combined side, upper and lower tines form a funnel shaped opening through which deer gain entry for passage through the gate in one direction. The tines flex to permit passage of deer in the intended direction, but prevent passage in the opposite direction. Wedge members limit movement of the side tines under undue side pressure on the tines.

3,803,764

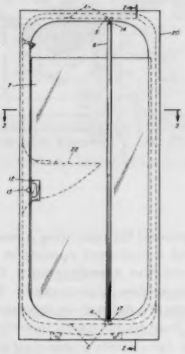
PIVOTED SHOWER STALL DOOR

Michael Lax, 1937 W. Main St., New York, N.Y.

Continuation of Ser. No. 143,420, May 14, 1971. This application Sept. 1, 1972, Ser. No. 285,704

Int. Cl. E05d *7/06*

U.S. Cl. 49—390 **6 Claims**



A shower stall door is fastened to a pivot pole between the center of the door and one edge of the shower stall. On pivoting the door on its pivot pole, which is outside the door, a substantially waterproof and water-deflecting construction results when the door is closed.

3,803,765

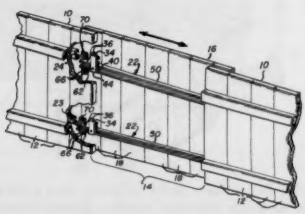
TELESCOPIC CANTILEVER GATE ASSEMBLY

Charles J. Ritner, 3496 Picadilly Dr., San Jose, Calif.

Filed May 10, 1973, Ser. No. 358,987

Int. Cl. E05d *13/02*

U.S. Cl. 49—427 **7 Claims**



A gate-fence railing assembly for a cantilever slide gate, said assembly including a first sub-guide track-roller assembly to be supported by a fence section intermediate the top and bottom edge of the fence section and a second sub-guide track-roller assembly to be supported by the gate intermediate the top and bottom edge of the gate with the roller of the first sub-guide track-roller assembly positioned within the guide track of the second sub-guide track-roller assembly and the roller of the second sub-guide track-roller assembly positioned within the guide track of the first sub-guide track-roller assembly whereby the assemblies may be telescoped relative to one another and the gate extended to span the gate opening and retracted into a space equal in length to the gate opening parallel with the fence section.

3,803,766

SEALING ARRANGEMENT FOR VEHICLE DOORS

Francois Pierre Mesnel, Neuilly-sur-Seine, France, assignor to Etablissements Mesnel, Bellevue, France

Filed Apr. 28, 1972, Ser. No. 248,732

Int. Cl. E04b *1/66*

U.S. Cl. 49—484 **11 Claims**

A sealing arrangement between a vehicle door and its frame comprises an inner seal, mounted on the frame and engageable by an inner part of the closed door, and an outer seal mounted on a guttering of a roof of the vehicle and engaged by an outer flange of the closed door, the outer seal comprising a first member shaped to hook over the guttering and supporting a second member of resilient material which contacts and seals with the outer flange, the outer seal prevents air entering between it and the inner seal and so reduces wind noise when the vehicle is travelling at high speeds as well as reducing the likelihood of water entering the vehicle via the door.

3,803,767

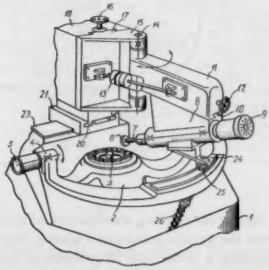
MACHINE-TOOL FOR MACHINING GEAR TEETH

Vladimir Andreevich Kotov, Sadovnicheskaya, naberezhnaya, 61, kv. 7; Mikhail Pinievich Kvitko, Khoroshevskaya ulitsa, 15, kv. 158, and Igor Ivanovich Kirichinsky, Taganskaya ulitsa, 24, kv. 41, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 854,111, Aug. 29, 1969, abandoned. This application Nov. 3, 1971, Ser. No. 195,182

Int. Cl. B24b *7/00*

U.S. Cl. 51—33 R **2 Claims**



A machine for form grinding a tooth side of a spiral bevel gear having a wide pitch angle and a profile angle variable between the tooth ends comprising a spindle carrying a gear

blank in a fixed position, the spindle being mounted on a carrier swingable about a horizontal axis; a rotary tool oscillatable about a vertical axis; and a means for simultaneously effecting the swinging movement of the carrier and the oscillating movement of the rotary tool.

3,803,768

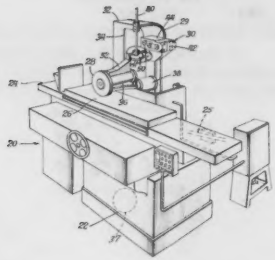
CONTROL FOR MOVEMENT OF A DEVICE THROUGH SUCCESSIVE RANGES

Arthur K. Littwin, 6555 No. Lemai, Lincolnwood, Ill.

Filed Sept. 17, 1971, Ser. No. 181,539

Int. Cl. B24b *41/02, 41/10*

U.S. Cl. 51—93 **17 Claims**



Control for a machine having an advanceable part, such as a grinder having a grinding head which is advanced against a workpiece, the control being operative for automatically advancing the grinding head through a series of ranges according to a predetermined pattern, and thereafter completing a cycle and resetting the machine for a next cycle.

3,803,769

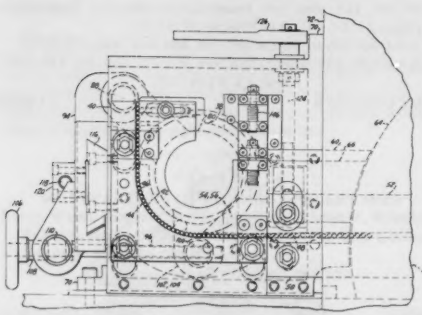
WORK FEEDER FOR A DOUBLE DISC GRINDER

Herbert J. Fallon, and Jack L. Garnett, both of Beloit, Wis., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 3, 1973, Ser. No. 347,610

Int. Cl. B24b *9/00, 47/02, 7/00*

U.S. Cl. 51—112 **4 Claims**



A work feeder for feeding workpieces of circular cross section between the grinding discs of a double disc grinder is disclosed including a drive roll 15 positioned exteriorly of the grinding discs and adapted to drive the workpieces through a pair of straight guide bars positioned between the grinder discs. The drive roll frictionally engages the workpieces as they are fed into the clearance space between a fixed peripheral guide and the drive roll to drive them forward into the guide bar space and thence through the grinding zone.

The drive roll is supported for pivotal and linear adjusting movement to allow a range of workpiece sizes to be accommodated with only a change in the drive roll sizes and a series of adjustments of the drive roll support and guide bars.

3,803,770

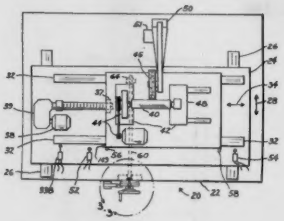
DRIVE CONTROL ARRANGEMENT FOR GRINDERS AND OTHER MACHINES

Harry M. Abraham, Jr., Lake Orion, Mich., assignor to AA Gage Division, Ferndale, Mich.

Filed Jan. 3, 1972, Ser. No. 214,737

Int. Cl. B24b *51/00*

U.S. Cl. 51—165.78 **10 Claims**



A drive arrangement for operating a machine slide to feed a workpiece toward a tool until coming to an in positive limit position and thereafter rapidly return the workpiece until coming to an out positive limit position. The in and out positive limit positions are defined by mechanical stops mounted on the machine base to constrain movement of an abutment member which is operatively connected to the machine slide. In and out limit sensing circuits are responsive to interengagement of the abutment member with the positive stops for providing in and out limit signals. A control circuit responsive to these signals controls the operating sequence of the machine.

3,803,771

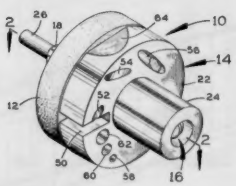
DEVICE FOR GRINDING A SCREWDRIVER TIP

Clarence L. Bunn, 1359 S.W. 21st Ter., Fort Lauderdale, Fla.

Filed Sept. 22, 1972, Ser. No. 291,268

Int. Cl. B24b *23/02*

U.S. Cl. 51—170 T **6 Claims**



A grinding device for grinding of a tool such as a screwdriver and including an abrasive wheel, a guide mounted jointly with the wheel for guiding a tool into contact with the wheel, and a common mount for the wheel and the guide arranged such that the wheel can rotate relative to the guide.

3,803,772

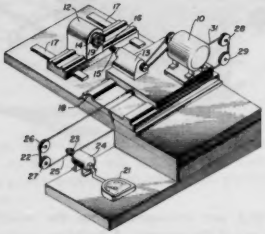
GRINDING MACHINE

John Klar, West Boylston, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Continuation-in-part of Ser. No. 63,704, Aug. 14, 1970, abandoned. This application July 20, 1972, Ser. No. 273,641

Int. Cl. B24b *5/10, 47/20, 47/22*

U.S. Cl. 51—98 R 7 Claims



This invention relates to a grinding machine and, more particularly, to apparatus for forming a surface of revolution by the abrasion process making use of the controlled-force principle.

3,803,773

RECIPROCATING TYPE PORTABLE FILING MACHINE

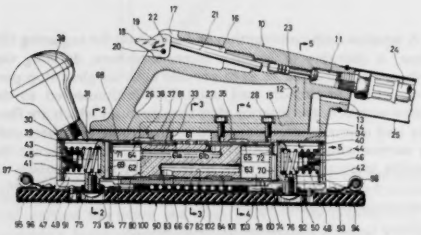
Kazuo Odawara, Funabashi; Mituharu Magami, Chiba, and Kyoichi Hirokawa, Tokyo, all of Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1972, Ser. No. 303,430

Claims priority, application Japan, July 20, 1972, 47-072862

Int. Cl. B23d *67/00*

U.S. Cl. 51—170 TL 12 Claims



A reciprocating type portable filing machine of a fluid actuatable structure having a finger operable valve mechanism for the pressured fluid introduction, a cylindrical reciprocator which is incorporated within a main body being resiliently loaded in axial directions, a piston slidable within the reciprocator in directions opposite to the sliding directions of the latter and a filing part coactive with the reciprocator for the filing work.

3,803,774

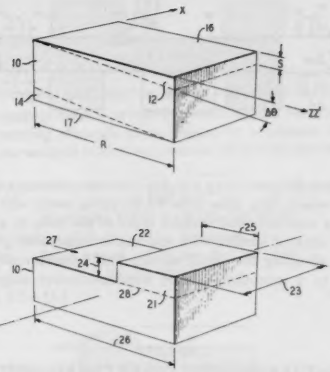
TECHNIQUE FOR CORRECTING THE CRYSTALLOGRAPHIC ORIENTATION ANGLE OF CRYSTALS BY THE FORMATION OF MESAS AND DOUBLE FACE LAPPING

Anton Johann Miller, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1972, Ser. No. 317,515

Int. Cl. B24b *1/00*

U.S. Cl. 51—283 16 Claims



A technique for accurately correcting the orientation angle of crystal plates utilizes a mesa formed along one edge of at least one major surface of the plate. The length of the mesa along the surface and the height are determined by the amount of angle correction desired. After formation of the mesa, the plate is double face lapped until the mesa is removed at which point the orientation angle has been changed the desired amount and the lapped major surfaces of the plate are parallel. The mesa can be formed by various techniques as described.

3,803,775

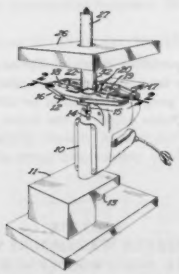
SABER SAW BRACKET

Hector Z. Demeules, 740 Altura St., Minneapolis, Minn.

Filed July 24, 1972, Ser. No. 274,734

Int. Cl. B24b *19/00*; B23b *23/00*

U.S. Cl. 51—241 R 3 Claims



A universal bracket for saber saws to convert handheld saber saws to a table tool. A table supporting plate and saber saw shoe plate are secured to opposite ends of a tube that slidably supports a bearing like tool carrier which links the saber saw, via a blade like member, to a tool extending above the table supporting plate.

3,803,776

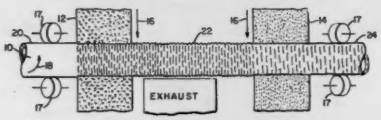
METHOD FOR TREATING SURFACES OF ZIRCONIUM ALLOY TUBES

Frederick Shaffer, Columbia, S.C., and David B. Scott, Manchester, Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 678,996, Oct. 30, 1970, abandoned. This application July 12, 1971, Ser. No. 161,771

Int. Cl. B24b *1/00*

U.S. Cl. 51—326 **6 Claims**



A method for producing a highly corrosion resistant surface on a zirconium-base alloy tube by abrading away with a fine abrasive a contaminated surface layer of the tube to provide an initial striated surface with successive ridges and grooves, and then abrading the initial surface with a functionally finer abrasive to a smoother surface with successive ridges and grooves.

3,803,777

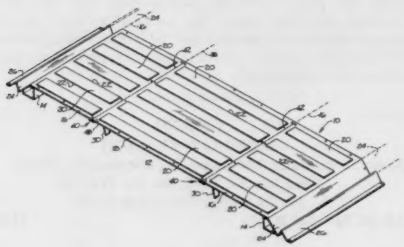
WEATHERPROOFING COVER FOR ROADBED

James E. Stewart, 200 E. 1st St., Wichita, Kans.

Filed May 9, 1973, Ser. No. 358,633

Int. Cl. E04b *1/343*

U.S. Cl. 52—11 **12 Claims**



A lightweight, portable cover comprised of a plurality of panels that can be interconnected in sealing relationship and positioned over a prepared roadbed to temporarily weatherproof the latter. Outer edges of the cover are configured to overlie previously set pouring forms. These outer edges also define troughs which collect and carry off water from the overlying cover.

3,803,778

MEZZANINE-STORAGE WAREHOUSE WITH INTEGRAL RETAIL SHOWROOM FACILITIES

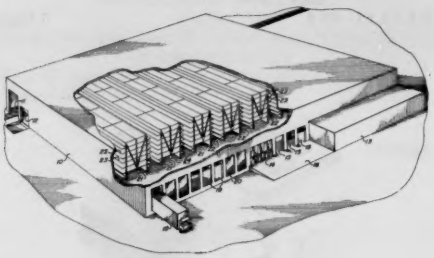
Thomas W. Short, Phoenix, Ariz., assignor to Levitz Furniture Corporation, Pottstown, Pa.

Filed Aug. 14, 1972, Ser. No. 280,491

Int. Cl. E04h *14/00*

U.S. Cl. 52—33 **1 Claim**

A combination showroom-warehouse retail sales facility includes a plurality of parallel elongate enclosures which define retail showroom areas inside the enclosures and warehouse access aisles between them. A plurality of vertically spaced warehouse storage floors are located above the showroom enclosures. The warehouse storage spaces between the floors



open onto and are accessible from the warehouse aisles between the retail showrooms. A building encloses the retail showroom areas, associated warehouse access aisles, and warehouse storage spaces.

3,803,779

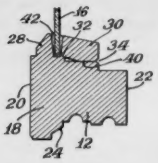
WINDOW SASH AND METHOD FOR REGLAZING THE SAME

Herman S. Kuyper, Knoxville, and Forrest L. Dunsmoor, Bettendorf, both of Iowa, assignors to Rolscreen Company, Pella, Iowa

Filed Mar. 1, 1973, Ser. No. 337,100

Int. Cl. E06b *3/62*; **E04c** *3/36*

U.S. Cl. 52—99 **14 Claims**



A window sash construction and a method for reglazing the same. A plurality of wooden frame members, defining the sash, are constructed so as to provide exterior glass stop portions which are rigidly and unitarily interconnected to the frame members and interior glass stop portions which are flexibly and unitarily interconnected to the frame members only by narrow wood strips. Adhesive is used to rigidly secure the flexible interior stop portions to the sash frame members. A groove is defined between the rigid exterior stop and the adhesively secured interior stop.

3,803,780

FOLDING POLE FOR HIGH FLOOR MAST

Robert B. Donnally, Tulsa, Okla., assignor to Lee C. Moore Corporation, Tulsa, Okla.

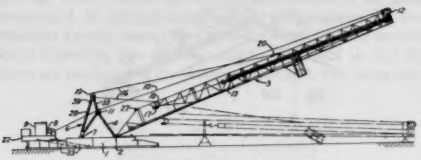
Filed May 11, 1972, Ser. No. 252,182

Int. Cl. E21b *15/00*; **B66c** *23/62*

U.S. Cl. 52—116 **3 Claims**

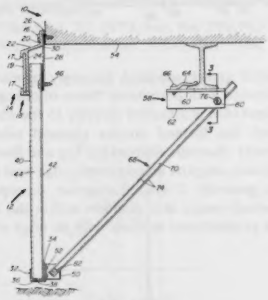
An oil well derrick gin pole has the upper ends of its front legs connected to its rear legs, and sheaves supported by the upper ends of the rear legs to aid in raising a mast hinged to the base supporting the gin pole. The rear legs of the gin pole

have upper portions that extend above their connections to the front legs, and these upper portions are hinged to the portions of the rear legs below them, whereby the upper portions



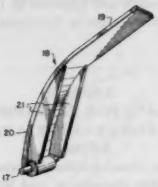
of the rear legs can be swung backward and down to shorten the rear legs so that they will not interfere with raising an elevated drawworks support into operative position after the mast is erected.

3,803,781
SKIRTING FOR BELOW DWELLING WITH DECORATIVE INSERT STRIP
Francis L. Struben, Whitehall, Md., assignor to Silver-Top Manufacturing Company, Inc., White Marsh, Md.
Filed Feb. 3, 1972, Ser. No. 223,220
Int. Cl. E04d *2/38*
U.S. Cl. 52—149 **9 Claims**



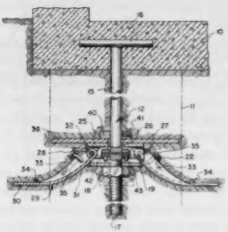
A generally U-shaped channel is supported from the underside of a mobile home and is spaced directly beneath the vertical walls of the home and slightly above the ground level to provide a lower channel. A similarly shaped channel configuration is formed by preshaped sections which are attached to the lower edge of the vertical walls and spacially above the U-shaped channel to form an upper channel. A plurality of preformed skirting panels are positioned between the spaced upper and lower channels with edge portions of the skirting panels located in the channels. The panels are fastened to the channels to provide a suspended, self-supporting skirting for below a dwelling. The upper supported U-shaped channel is provided with slotted edges lengthwise thereof for receiving a decorative color strip which runs lengthwise thereof and corresponds to the panels.

3,803,782
RETRIEVABLE EARTH ANCHOR
Julius R. Ballew, P.O. Box 1716, Seminole, Tex.
Filed June 6, 1973, Ser. No. 367,595
Int. Cl. E02d *5/80*
U.S. Cl. 52—161 **4 Claims**



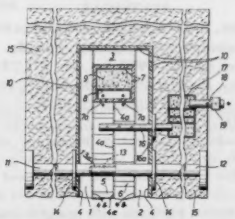
A retrievable earth anchor having a plurality of reinforced earth-engaging blades swingably mounted on a base assembly and extending through guide means in a manner that the blades are wedged in locking position when fully extended.

3,803,783
FOUNDATION EARTH ANCHOR
Julius R. Ballew, P.O. Box 1716, Seminole, Tex.
Filed Aug. 8, 1973, Ser. No. 386,800
Int. Cl. E02d *5/80*
U.S. Cl. 52—161 **4 Claims**



Apparatus embedded in the ground and forming a shock absorbing foundation for an aboveground structure. The apparatus includes a plurality of extendable and retractable earth-engaging wings that form a foundation for a structure which resists earthquake tremors.

3,803,784
COMPOSITE WALL ELEMENT FOR THERMAL AND ACOUSTIC INSULATION
Otto Alfred Becker, Robert-Koch-Strasse 59, 66 Saarbruecken 6, Germany
Filed June 25, 1971, Ser. No. 156,852
Int. Cl. E04c *2/36*
U.S. Cl. 52—173 **14 Claims**



The composite wall element of this invention comprises an insulating wall element arranged within or inserted into an

outer, pressure resistant, preferably load bearing wall element which completely encloses the former. Within the inner insulating wall element and/or the cavity within the outer wall element a substantially dry gas atmosphere and preferably air atmosphere is established and maintained under sub-atmospheric, atmospheric, or superatmospheric pressure. Such novel composite wall elements are superior in their thermal and/or acoustic insulation properties to heretofore known structural elements.

3,803,785

ANCHORING MEANS FOR TENSIONED MEMBER FOR HEAVY LOADS, FOR EXAMPLE, A SLANTED CABLE BRIDGE

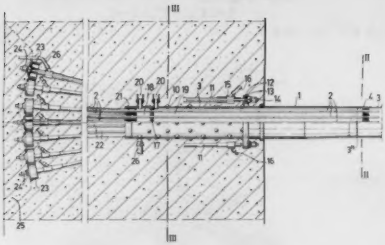
Ulrich Finsterwalder, Munich-Obermenzing; Klemens Finsterwalder, Socking uber Starnberg, and Rudolf Buhrer, Starnberg, all of Germany, assignors to Firma Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany

Filed Mar. 24, 1972, Ser. No. 237,951

Claims priority, application Germany, Mar. 27, 1971, 2114863

Int. Cl. E04c *3/10, 5/20*

U.S. Cl. 52—230 **12 Claims**



Anchorage for a tensioned tension member for heavy loads in a concrete structure component such as a slanting cable of a slanted cable bridge comprising a plurality of parallel tension members such as wires or litz, that are arranged together in a common cover and surrounded by cement mortar that fills the space of the cross section of the cover not occupied by the tension member and which are fanned out in the direction of the anchorage, where the cover extends into the concrete structural part and is defined by a metal casing at least in the entrance area into the concrete part, and which, besides being connected with the tension members, is connected with the concrete part.

3,803,786

SPLINE FOR GLASS FIBER REINFORCEMENT FOR A BUILDING MADE FROM PRESCORED FLAT SHEET MATERIAL

Marvin Schneider, Bryn Mawr, Pa., assignor to Panokraft Corporation of Canada Limited, Quebec, Canada

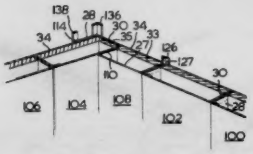
Filed July 14, 1972, Ser. No. 271,755

Claims priority, application Canada, May 3, 1972, 141184

Int. Cl. E04b *1/12, 1/28*

U.S. Cl. 52—233 **4 Claims**

A building which requires a minimum of material is prefabricated by providing a series of prescored glass fibre reinforced double faced corrugated paperboard panels which are folded into rectangular section box beams on site. These box beams, a wooden platform with uprights and a roof ridge beam provide the complete shell for a house incuding the inside walls. Insulation is provided in the box cavity and the assembly can be carried out with unskilled labor using adhesive and stapling devices; prefinished doors and windows can be added as desired. The box beams are thus almost surrounded by a channel of glass fibre reinforcement and T-section splines



are placed between channels and bonded to both the webs and base of the channels so that each outside wall and roof comprises an integral glass fibre reinforced shell with webs extending inwardly from the shell.

3,803,787

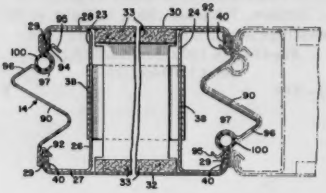
SPACE DIVIDER PANEL CONSTRUCTION

Earl N. Daggy, Richmond, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,272

Int. Cl. E04b *2/32*

U.S. Cl. 52—241 **6 Claims**



An all-metal panel adapted for use in movable space dividers is formed with peripheral frame of channel construction. The panel skin is attached directly to the channels at inwardly-turned lips formed on the channel side walls. The upper and lower channels support the top and floor seals while the side channels support an improved edge seal consisting of a removable generally Z-shaped member, incorporating a tubular seal, which snaps into position within the side channel and which is proportional to mate with an edge seal on an adjacent seal.

3,803,788

BUILDING CONSTRUCTION AND PROCESS FOR PRODUCING STRUCTURAL ELEMENTS FOR SUCH CONSTRUCTION

Paul Artmann, Maingstrasse 38, Vienna 13, Austria

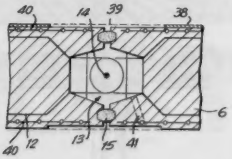
Continuation of Ser. No. 849,343, Aug. 12, 1969, abandoned. This application Dec. 23, 1971, Ser. No. 211,459

Int. Cl. E04b *2/34*

U.S. Cl. 52—417 **8 Claims**

A building construction is provided in which walls are formed of prefabricated elements. These elements consist of standard elements of predetermined width and fitting elements of substantially lesser width. The standard and fitting elements are provided with identical joint configurations so that the elements can be connected together to form walls of discrete length. A common integral and joint-free facing layer extends as an outer skin over the entire wall surface thus formed. The standard elements constitute at least three-quarters of the total construction, whereas the fitting elements

constitute no more than 25 percent of the construction. The elements are provided on their abutting edges with longitudinal recesses which cooperatively form a hollow space into which a sealing compound can be inserted. Moreover, there can be provided steel reinforcements which are extended through these hollow spaces to be anchored in the sealing compound. In addition the invention contemplates the use of brackets having connection with the elements and including loops extending into the aforesaid hollow space so that these loops are anchored in the sealing compound. The loops can be



placed in overlapping relationship to form an opening through which a reinforcing rod can be vertically inserted. Moreover, the elements can be provided inside their lateral recesses with a toothed configuration to improve the bond with the sealing compound. In the process of manufacturing such prefabricated elements, a homogeneous mass can be charged into a vibratable mold for forming the supporting body of an element. On the free top surface of this mass there is strewn a dry mixture of fine sand and binder which is bound up by moisture rising from the supporting body. Offsets can be formed in the outer layer.

3,803,789

PANEL FIXING SYSTEM

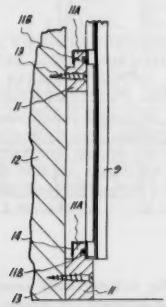
Darrell Holdsworth Gibson, Fairfield, New South Wales, Australia, assignor to Douglas H. Gibson Pty. Limited, New South Wales, Australia

Filed Sept. 29, 1972, Ser. No. 290,703

Claims priority, application Australia, Oct. 25, 1971, 6769/71

Int. Cl. E04c *1/34*; **E04d** *1/36*

U.S. Cl. 52—471 **5 Claims**



Wall and ceiling panelling means comprising a and formed of boards, each having a groove extending longitudinally of anformed in each of the longitudinal edge faces of the boards. An array of substantially parallel spaced-apart battens is fixed in any suitable manner to a wall structure, each batten having a protruding upper rib and a clip retainer groove formed thereon. A plurality of fixing clips are provided, each adapted to engage any one of the battens, and each having anchorage flange means being adapted to enter the grooves in the boards to retain the boards in assembly with the battens and wall structure.

3,803,790

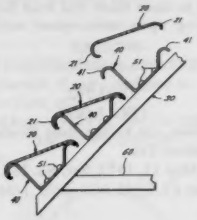
BUILDING PANEL STRUCTURE

Raymond A. Buck, and Larry R. Buck, both of Fort Worth, Tex.

Filed Nov. 10, 1972, Ser. No. 305,364

Int. Cl. E04b *7/16*

U.S. Cl. 52—473 **1 Claim**



A spring clip for use in a building panel structure which includes a series of elongated sheet metal strips or slats arranged substantially side by side in parallel, spaced apart relation to each other with their adjacent edges overlapping to a greater or lesser degree, and a pair of elongated supporting members arranged transversely of the slats and supporting them at their ends, the slats being characterized by their inherent spring tension and having their longitudinal edges rolled substantially 180°, on the same side of the slat, a plurality of the spring clips of the invention being arranged on each of the supporting members, at longitudinally spaced intervals, for engagement by the rolled longitudinal edges of the slats whereby the slats are attached to the supporting members.

In one form thereof the spring clip of the invention comprises a shaped element consisting of a strip of sheet metal, characterized by its inherent spring tension, which is bowed intermediate its ends and has its opposite end portions, which are spaced progressively farther apart in a longitudinal direction, rolled outwardly in opposite directions substantially 180°. The material of the spring clip is bent at obtuse angels intermediate its ends to form two end portions, one of which is longer than the other, which are inclined in varying degree relative to the middle portion, the longer of the end portions being almost perpendicular to the middle portion. In the arrangement described the individual slats are supported on the supporting members in an inclined plane relative to the plane of the supporting members.

3,803,791

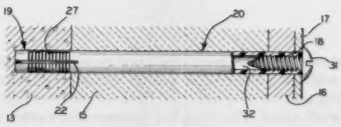
DEVICE FOR AND METHOD OF MOUNTING WALL FACINGS

William C. Turnbull, Sylvania, and William H. Hasselbach, Rossford, both of Ohio, assignors to William C. Turnbull, Toledo, Ohio

Filed Dec. 18, 1972, Ser. No. 316,384

Int. Cl. F16b *13/06*; **E04b** *2/14*

U.S. Cl. 52—506 **10 Claims**



The mounting device comprises a cylindrical plastic tube with a split end, a spreading element including a drive pin for radially expanding the split end of the tube, and a cap screw threadable into the opposite or open end. In the method, a

pattern of openings in a wall facing panel are aligned with corresponding holes in a substrate, the plastic tubes are inserted through the openings in the panels and their split ends seated in the holes in the substrate; a tool is inserted into the tubes from their open ends to actuate the spreading elements and so expand the split ends of the tubes into binding relationship with the walls of the holes in the substrate; thereafter the tool is removed, and short cap screws are threaded into the open ends of the tubes to close them and hold the facing panel in place while leaving open unoccupied sections within the tubes.

3,803,792

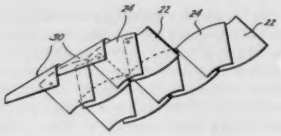
TIRE ROOF

Gary Richard Fulton, c/o Fulton Roof Products, 167 W. Interstate 10, Houston, Tex.

Filed May 12, 1972, Ser. No. 252,710

Int. Cl. E04d *1/22, 1/26, 1/34*

U.S. Cl. 52—533 **13 Claims**



A method for constructing a roof covering out of automobile tires, said tires being cut and segmented in a certain manner and then attached to the roof decking, and the roof covering resulting from the method. The invention is also in a covering for the outside walls of a building and for other structures.

3,803,793

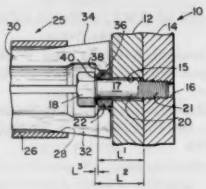
METHOD AND APPARATUS FOR PRELOADING A JOINT

Warren F. Dahl, Philadelphia, Pa., assignor to Standard Pressed Co., Jenkintown, Pa.

Continuation of Ser. No. 28,377, April 14, 1970, abandoned. This application Sept. 1, 1972, Ser. No. 285,906

Int. Cl. F16b *5/02, 35/00*

U.S. Cl. 52—758 F **6 Claims**



A fastener assembly including a bolt member for preloading a joint wherein a deformable washer is interposed between an extending portion of a threaded fastener element and the adjacent work piece. The threaded fastener and washer are first snugged against the work piece and the deformable washer is then crimped to elongate the washer thereby stretching the bolt by reaction of the washer against the bolt and the adjacent work piece. Elongation of the bolt effects a preload in the joint which may be predetermined to provide a uniform clamping force in a joint.

3,803,794

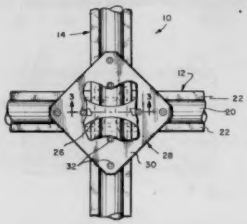
CROSS MORTISED JOINT FOR A STRAIN ENERGY ERECTILE STRUCTURE

George R. Luckey, Playa Del Rey, Calif., assignor to TRW, Redondo Beach, Calif.

Filed June 1, 1971, Ser. No. 148,493

Int. Cl. F16b *7/00*

U.S. Cl. 52—758 A **6 Claims**



A cross mortised joint for a strain energy erectile structure including two intersecting thin-walled resiliently flexible tubular beams disposed in coplanar intersecting relation with one longitudinal wall portion of each beam passing through wall openings in the other beam and joined by thin flexible gusset plates at either side of the joint in such a way that the joint may be compressed to a flattened configuration wherein the beams store elastic strain energy for restoring the joint and beams to normal expanded configuration when released.

3,803,795

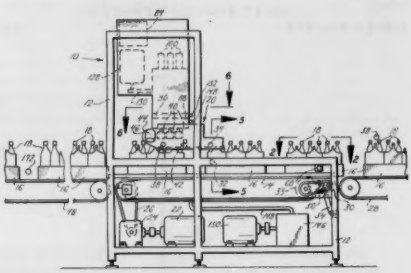
CLOSURE REMOVING APPARATUS AND METHOD

Joseph F. Ouellette, 822 E. Essex, St. Louis, Mo.

Filed Jan. 26, 1973, Ser. No. 326,998

Int. Cl. B67b *7/18*

U.S. Cl. 53—3 **9 Claims**



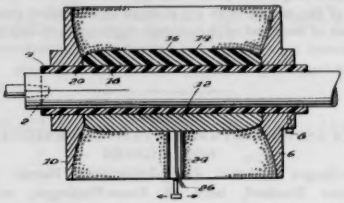
An apparatus for automatically removing closures from containers as the containers are transported with respect to the apparatus in predetermined geometric array, as when said containers are drink bottles arranged in columns and rows in wooden cases. The position in the array of each container having a closure thereon is sensed and data representative thereof is stored. A plurality of rotatable, closure-removing devices is provided which individually are energized into contact with the closure on closed containers when the containers have moved into alignment with the closure-removing devices. The stored data respecting the location of containers having closures thereon is employed to permit only those closure-removing devices which are in alignment with containers having closures to become energized.

3,803,796

METHOD OF FORMING AND PACKAGING FLEXIBLE MATERIAL WITH AN INNER END PAYOUT

James W. Newman, Scarsdale, and Nicholas M. Bavaro, Mt. Vernon, both of N.Y., assignors to Windings, Inc., Yonkers, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,718
Int. Cl. B65b *11/00, 53/02, 63/04*
U.S. Cl. 53—21 FW 4 Claims



A package of flexible material of the universal type with a radial opening into the central axial opening through which the inner end of the material is drawn out is wound on a tube mounted on a spindle on the outside of which tube are secured segmental parts having downwardly turned ends, and end pieces of outwardly curved shape, abutting against the segmental parts. After the package is wound, the tube is removed from the spindle, one of the end parts is removed, an end disc and a backing member therefor are positioned so to compress the package at one end to form a flat end wall, and secured in this position. Thereafter the other end member is removed and an end disc and backing member are applied on the other end in the same manner. A shrink wrap covering is then placed around the package including the end discs and is shrunk into place. Thereafter the package is removed from the tube, the backing members are removed and some of the segmental parts are taken out through one end of the axial opening. Cones are then positioned within the central axial opening, and secured in position. The cones engage the remaining segmental parts and hold them against the inner wall of the package during shipment. When the package is to be paid out, one of the cones is removed, the remaining segmental parts are taken out and the cone is then replaced.

3,803,797

METHOD OF PACKING STACKS OF FLAT ARTICLES INTO PACKAGES AND FRAMEWORK USED FOR EFFECTING SAME

Yakov Efimovich Duchinsky, Kiev; Grigory Avramovich Radutsky, Moscow; Rafail Efimovich Kheifets; Grigory Iosifovich Zax, both of Kiev; Nikolai Ivanovich Anikanov, Moscow; Leonid Pavlovich Grachev, Moscow, and Mikhail Evseevich Frumkin, Moscow, all of U.S.S.R.

Filed Mar. 4, 1971, Ser. No. 120,843
Int. Cl. B65b *11/26, 11/22, 13/02*
U.S. Cl. 53—32 1 Claim

A method of packing stacks of flat articles into packages, whereby a stack is placed along with a wrapping material into a split framework embracing the stack in such a manner that the material wraps it along the upper and two opposite lateral sides, the subsequent bending of the ends of the material to under the lower side of the stack and bending of the end faces of the package being effected in the split framework.

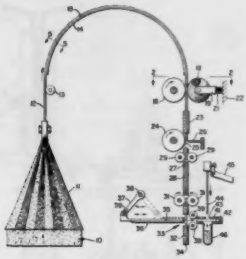
The framework used for effecting this method comprises a box open from the bottom and two opposite face sides, the side walls of the box being provided with vertical slots along which the projections of a plate move.

3,803,798

FOLDED TOWELETTE GUIDE AND FEED MECHANISM

David Clancy, Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,732
Int. Cl. B65b *63/04*
U.S. Cl. 53—120 9 Claims



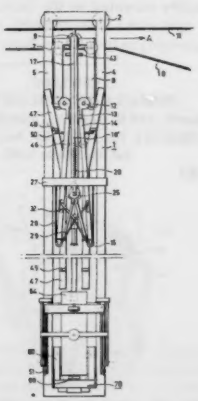
Combination guide and feed means for a longitudinally folded towelette web comprises a convex cylindrical guide surface over which the folded web is slidably pulled by a feed pass wherein a rubber roller resiliently presses the folded web against the friction surface of a driven feed roller.

3,803,799

DEVICE FOR PACKING OBJECTS IN A BAG

Jacob Hendrik Mosterd, En-Merkenbureau De Wit N. V. 11, Surenomestraat, Barneveld, Netherlands

Filed Sept. 11, 1972, Ser. No. 287,829
Claims priority, application Netherlands, Sept. 10, 1971, 7112520
Int. Cl. B65b *43/26, 39/06*
U.S. Cl. 53—187 8 Claims



The invention provides an improved device for packing objects in a bag, in which the objects are pushed through a sleeve

to come into a bag that is suspended below said sleeve. The improvement of the invention consists in that a means for supporting the open end of a bag is moved upwards to surround said sleeve after which it is moved downwards again. Simultaneously with this descending movement of the bag the object is pushed out of the sleeve. As a result of the invention damage or disengagement from its supporting means of the bag as well as air enclosures between the object and the bottom of the bag are avoided.

3,803,800

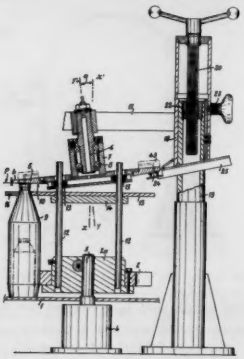
DEVICE FOR FITTING BOTTLE AND CONTAINER CAPS

Georges Antoine Tavernier, Lyon, France, assignor to Societe Neuvelle Baele Gangloff Racine Villeurbanne, Rhone, France

Filed Feb. 9, 1973, Ser. No. 331,246

Int. Cl. B67b *1/04*; **B65b** *7/28*

U.S. Cl. 53—264 **8 Claims**



Device for fitting caps, such as plastic bottles and containers, comprising essentially a revolving tray adapted to transfer separately, by means of clamps carried by its upper face caps picked up separately at a dispensing station to a sealing station whereat the caps are driven into the necks of the containers by a tapered lower surface of the tray. The latter revolves about a shaft slightly inclined to the vertical axis of an underlying positioning spider, thereby bringing the containers to be sealed to the sealing station. The tray and the spider revolve and are operatively connected by a pair of diametrically spaced vertical parallel rods rigidly carried by the spider, and engaging ball-and-socket bearings carried by the tray. The latter is rotatably mounted in the inclined shaft, carried by bracket arm, rigid with a sleeve slidably mounted on a vertical column, and carrying in turn a cap dispensing means.

3,803,801

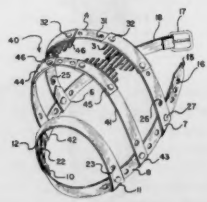
INSECT CONTROL DEVICE

Warren W. Barth, 145 S. Ninth St., Lincoln, Nebr.

Filed Oct. 16, 1972, Ser. No. 297,668

Int. Cl. B68c *5/00*

U.S. Cl. 54—81 **4 Claims**



An insect control device for use on the head portion of animals, such as cattle, horses, and the like for protecting eyes, face, head, and neck portion thereof from insects, face flies, and the like includes a halter like structure of straps or bands having insecticide impregnated therein. The device includes a head strap which extends around a forehead portion of an animal and has opposite end portions thereof adjustably connected to a band adjacent respective sides of the head of the animal. The band is adjustable and extends around a neck portion of the animal and behind the ears thereof and has opposite end portions of a nose strap adjustably connected thereto at respective positions adjacent respective sides of the head of the animal with the nose strap extending over a nose portion of the head of the animal. A plurality of lash strips are positioned over the eyes of the animal and mounted on the head strap.

3,803,802

PROCESS FOR RETARDING FLOWING RADIOACTIVE NOBLE GASES

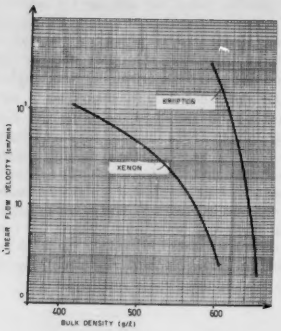
Hans-Jurgen Schroter, Essen-Frillendorf; Harald Juntgen; Dieter Zundorf, both of Essen-Heisingen, and Karl Knoblauch, Essen-Frillendorf, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Dec. 9, 1971, Ser. No. 205,411

Claims priority, application Germany, Dec. 10, 1970, 2060676

Int. Cl. B01d *53/04*

U.S. Cl. 55—66 **4 Claims**



Process for retarding flowing radioactive noble gases which comprises conducting an exit gas or discharge gas containing such noble gases through a column filled with active carbon wherein in the case of krypton retardation, the active carbon has a bulk density of 500–650 g/l and in the case of xenon retardation, a bulk density of 450–580 g/l and wherein the flow velocity of the exit or discharge gas in the interstices of the active carbon bed lies between the maximum linear flow velocity as shown in the drawing forming a part of the instant disclosure and a minimum flow velocity of 6 cm/min.

3,803,803

PROCESS FOR GAS DEMERCURATION

Lajos Raduly; Ioan Urmosi; Nita Todereanu, and Nicolae Chiroiu, all of Rimnicu Vilcea, Romania, assignors to Grupul Industrial de Chimie, Rimnicu, Vilcea, Romania

Filed June 6, 1972, Ser. No. 260,172

Claims priority, application Romania, June 7, 1971, 67191

Int. Cl. B01d *53/04*

U.S. Cl. 55—72 **2 Claims**

A process and a contact mass for demercuration (removal of mercury) of various gases (air in industrial rooms, hydrogen from an electrolysis plant using a mercury cathode, etc.).

According to the process, the polluted gas is passed, at ambient temperature and at atmospheric pressure or higher,

through a fixed bed out of contact mass. This consists of a porous material (such as active carbon, silica gel or alumina), impregnated with an aqueous solution of a trivalent iron salt. The excess water is run off, and the impregnated mass may be dried superficially before utilization.

3,803,804

APPARATUS FOR DESULFURIZATION OF EXHAUST GAS

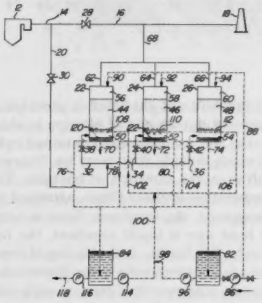
Norio Arashi, and Yukio Hishinuma, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1971, Ser. No. 200,020

Claims priority, application Japan, Nov. 24, 1970, 45-102740

Int. Cl. B01d *53/04*

U.S. Cl. 55—73 **7 Claims**



An apparatus for removing sulfur oxides contained in the exhaust gas. The apparatus is provided with, in each desulfurization tower thereof, an adsorbent for adsorption of sulfur oxides, and a distributor is disposed in the upper portion of the lower chamber formed in the tower immediately below the adsorbent layer so as to spray a desorption solution such as water to cause the liquid-gas contact between the desorption solution containing sulfuric acid and the exhaust gas in the lower chamber of the tower.

3,803,805

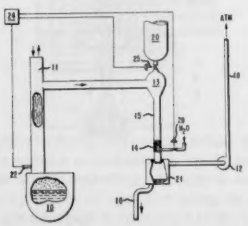
PROCESS FOR CONTACTING A GAS WITH A LIQUID

David N. Low, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 141,623, May 10, 1971, abandoned. This application July 17, 1972, Ser. No. 272,648

Int. Cl. B01d *47/00*

U.S. Cl. 55—73 **7 Claims**



A method is provided for effecting contact of a gas with a liquid by contacting the gas while flowing through a conduit by at least one jet of liquid flowing countercurrently to the gas. The average velocity of the gas through the conduit is maintained at a value of at least 1,000 feet per minute and at no less than flooding velocity. The velocity of liquid from the jet is sufficient to furnish greater than 1.0 jet horsepower per square foot of cross-sectional area of said conduit. The method may be used for scrubbing gases, absorption of materials from gases, or numerous other uses.

3,803,806

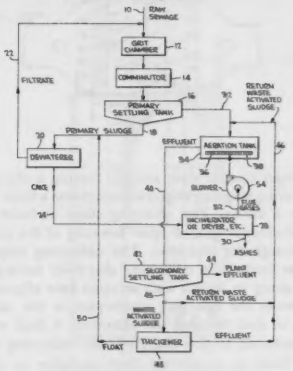
PROCESS FOR THE TREATMENT OF ACTIVATED SLUDGE

Thomas R. Komline, Sr., Gladstone, N.J., assignor to Komline-Sanderson Engineering Corp., Peapack, N.J.

Filed Sept. 28, 1972, Ser. No. 293,040

Int. Cl. B01d *47/02*

U.S. Cl. 55—85 **4 Claims**



Hot flue gases containing suspended solid particles, oxygen and other water soluble and insoluble components are injected beneath the surface of sewage sludge. Heat and the above components are transfered from the gases to the sludge. This provides oxygen for activating the sludge.

3,803,807

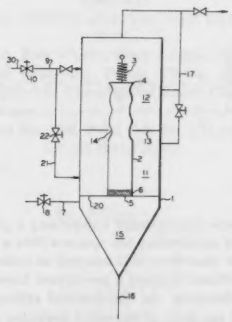
CARBON BLACK FILTRATION PROCESS AND APPARATUS

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 7, 1973, Ser. No. 357,641

Int. Cl. B01d *46/04*

U.S. Cl. 55—96 **8 Claims**



A carbon black process employing a compartmentalized housing, the lower portion of the bag being positioned in a lower compartment and the upper portion of the bag being positioned in the upper compartment. On carbon black removal from the bag, the black is removed first from the walls of the upper portion of the bag and thereafter from the walls of the lower portion of the bag.

3,803,808

TWO-STAGE TYPE OF ELECTRIC DUST ARRESTER

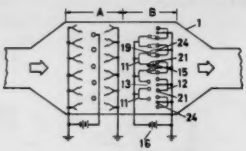
Akira Shibuya, Tokyo; Susumu Takayama, Saitama; Yoshifumi Nitta, Yokohama; Kazuhiko Sendai, and Masaharu Yana, both of Tokyo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo-to, Japan

Filed July 2, 1973, Ser. No. 375,801

Claims priority, application Japan, Sept. 20, 1972, 47-94207; Oct. 14, 1972, 47-102869; Dec. 19, 1972, 47-127402

Int. Cl. B01d *3/12, 3/45, 3/41*

U.S. Cl. 55—123 14 Claims



A two-stage electric dust arrester having a charging stage and a collecting stage arranged in succession within a chamber defined by a casing. The charging stage includes a pair of charging electrodes spaced apart laterally of the path of flow of dust through the chamber. The collecting stage, located downstream includes a collecting electrode having a pocket extending along its length with an open face aligned with the space between the charging electrodes in the direction of movement of dust through the chamber. A high voltage DC source connected to the charging and collecting electrodes creates a field to accelerate dust particles as they move between the electrodes and for attracting the particles into the pocket.

3,803,809

ELECTROSTATIC PRECIPITATOR

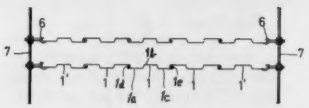
Rolf Gelhaar, Bergen-Enkheim; Juergen Nitz, Neu-Isenburg, and Kurt Rau, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 11, 1973, Ser. No. 378,343

Claims priority, application Germany, July 13, 1972, 2234368

Int. Cl. B01d *3/45*

U.S. Cl. 55—148 8 Claims



An electrostatic precipitator comprising a plurality of collector partitions subdividing the space within a housing into a plurality of flow chambers and adapted to collect, by electrostatic force, particles forming a gas stream traversing the flow passages. To eliminate the detrimental effects of flameless combustion on reaction of the solid particles of oxygen, the partitions are formed by upright electrode strips having lateral edges which are hooked together loosely in the normal positions of these electrode strips which may forcibly engage one another to prevent distortion of the partition upon thermal deformation of the strips. The outermost strips are provided with rigid profile support members which are hooked around the edges of the outermost strips throughout the height thereof.

3,803,810

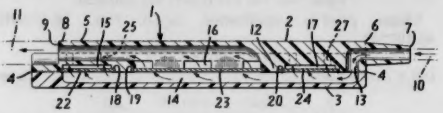
LIQUID-GAS SEPARATOR AND FILTER

David J. Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 248,911, May 1, 1972, abandoned. This application June 14, 1972, Ser. No. 262,824

Int. Cl. B01d *19/00*

U.S. Cl. 55—159 15 Claims



A filter unit that will not gas block is provided, capable of separating gases and liquids and of filtering liquids, and especially of removing and venting gases contained in liquids to be filtered, particularly liquids that must be filtered through a fine filter, such as in the filtration of bacteria. The device is based on a combination of three filters, arranged side-by-side, in alternate sequence. At least one filter is wetted by the liquid, and at least one is liquid-repellent; the liquid-wetted filter passes only the liquid, and the liquid-repellent filter passes only the gas. By employing three filters side-by-side, in alternate sequence, with two like filters on each side of the unlike filter of the three, the device is made position-insensitive with respect to gas removal.

3,803,811

MOLECULE SEPARATOR

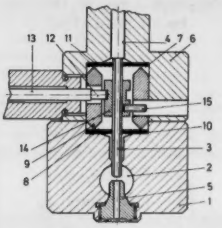
Erik Ragnar Ryhage, Stockholm, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Nov. 6, 1972, Ser. No. 303,878

Claims priority, application Sweden, Nov. 10, 1971, 14362/71

Int. Cl. B01d *53/02*

U.S. Cl. 55—197 4 Claims



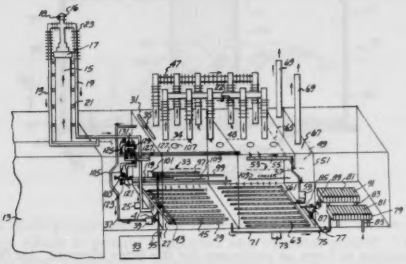
Molecule separator according to the jet principle comprising at least one separation stage with an evacuation chamber, connected to a pump provided with two coaxially arranged nozzles for the gas phase subject to separation, one of said nozzles being axially displaceable, said molecule separator further comprising control means in order that the distance between said nozzles can be varied from outside said separator during separation.

3,803,812

ANTI-SMOG DEVICE - FILTRATION MECHANISM

Carlos V. Romero, 17116 Wildemere, Detroit, Mich.

Filed Oct. 5, 1972, Ser. No. 295,181
Int. Cl. B01d *47/04*
U.S. Cl. 55—228 **13 Claims**



An anti-smog filtration system receives exhaust gases from a burning device and passes them through a chemical solution for separating the particulates into the solution. The remaining exhaust gases are recirculated for further separation of particulates into the solution and exhausted. The impregnated solution is passed through a mechanical filtration tank for removal of particulates therefrom and the remainder going to drain.

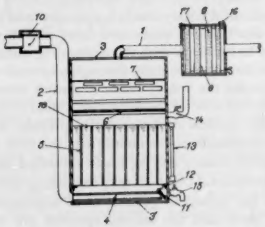
For further reduction of solids from the exhaust gases, they are delivered into a second solution containing tank for placing more particulate into the solution, the remainder being exhausted to atmosphere. The impregnated solution is circulated through a mechanical filter and drain and at the same time, a replenishing solution is pumped into the tank.

3,803,813

CLARIFYING DEVICE OF EXHAUST GAS

Masaharu Yuzawa, 21-23-17 Ota-ku Kamiikedai, Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,309
Claims priority, application Japan, May 18, 1971, 46-39971
Int. Cl. B01d *47/02*
U.S. Cl. 55—246 **5 Claims**



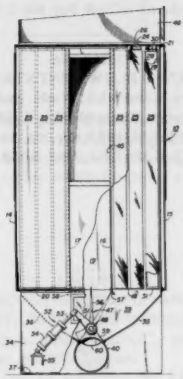
The exhaust gas clarifying device comprises a clarifying tank, arranged to contain an exhaust gas clarifying solution, and having a pipe nozzle extending adjacent its bottom wall and formed with a plurality of apertures along its upper surface. An exhaust gas inlet pipe is connected to the pipe nozzle and an exhaust gas outlet pipe communicates with the clarifying tank through the top wall thereof. An upright lattice grid is positioned in the tank above the pipe nozzle to prevent overflowing of the clarifying solution when the automotive vehicle is on a grade or the like and to prevent loss of the clarifying solution by splashing. Valve means are provided for withdrawing and replenishing the clarifying solution. An adsorption casing is interposed in the exhaust gas outlet pipe and contains several longitudinally spaced transversely extending blocks of activated carbon, the box having a top cover which may be opened to easily remove and replace the activated carbon blocks. A filter net and a splash-preventing baffle are interposed, in the flow direction, between the lattice grid and the exhaust gas outlet pipe, and a liquid level gauge is provided on the exterior of the tank.

3,803,814

DUST FILTER

Charles F. Parsons, Jr., 2030 Hassell Rd., Hoffman Est., Rolling Meadows, Ill.

Filed Feb. 28, 1972, Ser. No. 229,746
Int. Cl. B01d *46/04*
U.S. Cl. 55—287 **6 Claims**



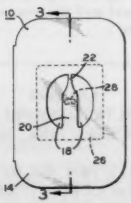
An air filter includes a compartmentalized housing with two banks of tubular filter elements being mounted in respective compartments separated by an air inlet compartment. A valve mechanism mounted in the housing below the filter elements selectively connects one of said banks between the air inlet compartment and the main air outlet of the filter and the other bank between the air outlet and a low pressure secondary outlet duct for cleaning the filter elements in the latter bank.

3,803,815

SELF-SEALING DISPOSABLE VACUUM CLEANER DUST BAG

James Anderson, Baie d'Urfe; Peter Lashta, Pierrefonds, and Francis John Holloway, Pointe Claire, all of Quebec, Canada, assignors to Consolidated Foods Corporation, Old Greenwich, Conn.

Filed Mar. 10, 1972, Ser. No. 233,541
Int. Cl. B01d *46/02*
U.S. Cl. 55—367 **7 Claims**



A disposable dust bag having an inlet opening for receiving a conduit for conveying dirt ladened air into the bag. This

opening is normally covered by a thin sheet of elastomeric material, such as surgical rubber, which is formed with a slit located centrally on the inlet opening. When the conduit is introduced into the opening, the slit is enlarged by the stretching of the rubber sheet to form an opening large enough to receive the conduit. After the bag has been filled with dirt, the conduit is withdrawn and the elasticity of the sheet causes the opening therein to contract to its original slit form, thus substantially sealing the inlet to the bag so as to prevent spilling of dirt therefrom.

Preferably the slit is curved in such a way that the ends thereof extend toward the center portion of the slit so that the stretching of the rubber imposses no stress at the ends of the slit to cause a tear to start at either end.

The small opening in the rubber sheet resulting from the slit may be substantially closed by providing a strip or tongue of cardboard or the like which is forced through the slit by the introduction of the inlet conduit and remains when the conduit is withdrawn as is shown in U. S. Pat. No. 2,596,808.

3,803,816

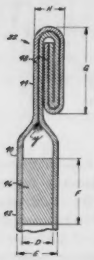
PATTERNED FLOW VENT STRUCTURE

Joseph C. McGuire, Kennewick, Wash., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed July 5, 1973, Ser. No. 376,527

Int. Cl. G21c *3/04, 7/00;* **B01d** *39/12*

U.S. Cl. 55—385 **2 Claims**



A vent structure for reliable long term operation at high temperatures is fabricated by annealing a tubing of predetermined length and size, placing a predetermined number of strands of stabilized zirconium oxide yarn of predetermined diameter longitudinally into one end of the tubing a predetermined distance therein, flattening and coiling and pressing the end portion of the tubing containing the yarn at predetermined pressures, annealing the formed tubing, and installing a particulate filter in the undeformed (normally lower) portion of the tubing. For use in venting helium generating reactor control pins located under hot molten sodium, a vent assembly including the vent structure and providing an air lock between the outer molten sodium and the vent is affixed to the upper end of each control pin.

3,803,817

FILTER ASSEMBLY

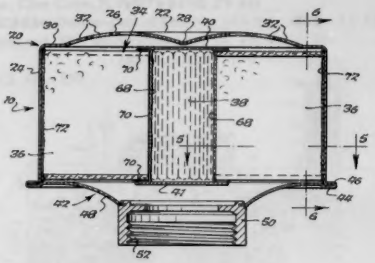
Robert David Lewis, Coloma, Mich., assignor to A-T-O Inc., Willoughby, Ohio

Filed Nov. 2, 1971, Ser. No. 194,946

Int. Cl. B01d *27/06*

U.S. Cl. 55—498 **3 Claims**

An annular filter element having a plurality of radially extending pleats adhesively secured in a canister having an end face provided with a multiplicity of openings therethrough. A cover having a central outlet is secured to the open end of the canister to form an enclosure for the filter element. Air flows axially through the openings, across the filter and through the cover outlet in registry with the user's breathing path.



3,803,818

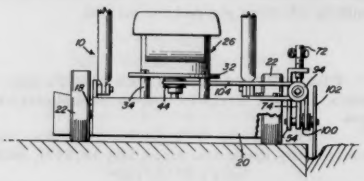
ROTARY MOWER WITH SELECTIVELY ACTUATABLE EDGER

Clarence E. Chaney, 907 Louis La., Kingsville, Md.

Filed Jan. 23, 1973, Ser. No. 325,989

Int. Cl. A01d *35/26*

U.S. Cl. 56—11.6 **7 Claims**



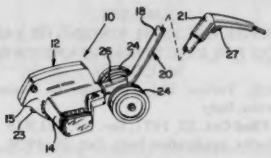
A rotary mower of the type including a body deck beneath which a horizontal rotary blade is disposed and having a vertical output shaft motor supported from and in elevated position relative to the deck with the depending output shaft of the motor projecting downwardly through a central opening in the deck and having the rotary blade mounted thereon. A mount is secured to one side of the deck and a slide is supported from the mount for vertical shifting relative thereto. A first horizontal transverse spindle is journaled from the slide and has a vertically disposed rotary edging blade mounted thereon. A pair of second horizontal front-to-rear extending spindles are journaled from the mount in general axial alignment at the same side of the deck and the second spindles are shiftable along their axes of rotation and carry pulley wheels on their remote ends, the first horizontal transverse spindle supported from the slide also including a pulley wheel and the portion of the output shaft extending between the underside of the motor and the upper side of the deck having a drive pulley mounted thereon. An endless flexible belt is trained about the drive pulley and the pulleys carried by the spindles and the spindles journaled from the mount and the slide include coacting structure whereby the horizontal front-to-rear extending spindles are shifted apart as the slide is lowered to an intermediate position from its upper position to tension the drive belt and the front-to-rear extending spindles are allowed to shift back toward each other as the slide is lowered from its intermediate position to a lower position.

3,803,819

TRIMMER-EDGER WITH HANDLE CLAMP

Stephen Jeffrey Ehrlich, Randallstown, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Nov. 28, 1972, Ser. No. 309,977
Int. Cl. A01d *35/20*
U.S. Cl. 56—17.1 **4 Claims**



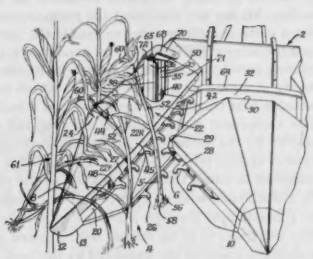
A multi-positionable head for a power-operated trimmer-edger which is ground supported and operator-guided. The cutter head is adjustably supported upon a handle extension to locate a rotating blade in either a vertical edging or horizontal trimming position. The head includes a journal-socket enclosing a spring clamp releasably gripping the shaft. Means is provided to limit the relative rotation between the head and handle extension, and to positively position and retain the parts in the desired positions.

3,803,820

POWERED ROTOR FOR ROW CROP HARVESTERS

William H. Knapp, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 10, 1973, Ser. No. 322,326
Int. Cl. A01d *45/02*
U.S. Cl. 56—98 **6 Claims**



A powered rotor is provided on the cropward divider of a row-crop harvester and is driven at a peripheral speed slightly faster than the speed of the conveyor chain mounted on this divider. The rotor is located intermediate the ends of the divider and projects upwardly with a forward inclination through an inwardly inclined sheet metal panel of the cropward divider. The rotor comprises preferably four equally spaced paddles defining undulant surface area which are effective to shake the stalks which ride up the divider from entanglement with the standing crops in the adjacent row.

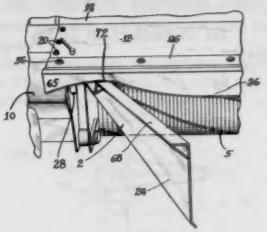
3,803,821

SELF-ADJUSTING CROP DEFLECTOR

Peter J. Peacock, Memphis, Tenn., and Thomas J. Scarnato, Barrington, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 18, 1973, Ser. No. 324,625
Int. Cl. A01d *75/00*
U.S. Cl. 56—192 **6 Claims**

A horizontally disposed crop deflector for a crop conditioning or windrowing machine wherein a stream of material is directed in an upward and rearward stream, the deflector being made of reinforced elastomer such as rubber or the like with preferably a cord insert. The deflector is curved downwardly and rearwardly and at its ends extends over converging shields which pivot about vertical axes and which warp the ends of the deflector upwardly when the shields are swung inwardly without adversely affecting the curvature of the intermediate portion which functions to deflect the crop downwardly.

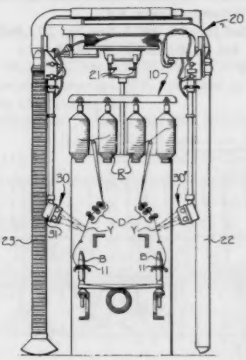


3,803,822

RADIATION SENSITIVE ENDS DOWN DETECTING APPARATUS AND METHOD

William L. Mulligan, Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed Dec. 14, 1970, Ser. No. 97,521
Int. Cl. D01h *13/16*
U.S. Cl. 57—34 R **1 Claim**



An apparatus and method for detecting ends of yarn on a textile yarn forming machine such as a spinning machine wherein radiation source and radiation detector mounted on and movable with a traveling unit direct radiation toward ends of yarn and respond to radiation reflected therefrom, the impingement of radiation onto the detector being amplified at a low signal to noise ratio through concentration of reflected radiation by a static reflector.

3,803,823

CONTROL APPARATUS FOR TEXTILE MACHINERY

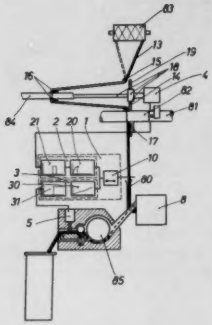
Heinrich Niestroj, Ingolstadt; Hans Landwehrkamp, Gerolfing, and Gerhard Hoeber, Ingolstadt, all of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Nov. 18, 1971, Ser. No. 200,113

Claims priority, application Germany, Nov. 28, 1970, 2058602

Int. Cl. D01h *15/00, 1/12*

U.S. Cl. 57—34 R 18 Claims



The specification describes a control apparatus for textile machinery for the actuation of actuating parts in a timed sequence in accordance with a change in yarn tension. The apparatus comprises a pulse stage, a first operating part arranged to be controlled by the pulse stage, a second operating part, and a delayed action timing stage arranged to actuate the second operating part.

3,803,824

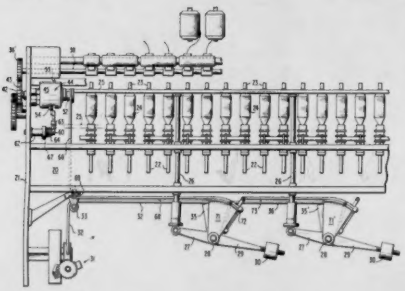
MECHANICAL RING RAIL LOWERING MECHANISM

Bobby Joe Williamson; Arch Eborn Cutting, and Robert Kenneth Crossland, all of Greenville, S.C., assignors to Southern Machinery Company, Greer, S.C.

Filed July 21, 1972, Ser. No. 273,866

Int. Cl. B65h *54/36;* D01h *9/14*

U.S. Cl. 57—54 15 Claims



As a spinning frame ring rail approaches the top of its next-to-last traverse, a mechanical release finger on the rail contacts a relatively fixed mechanical clutch actuator rod and is shifted by the rod to a release position. Responsive to this action, a trip element on the ring rail is shifted by spring force to an active position beneath the clutch actuator rod. On the final up stroke of the ring rail, the trip element engages the clutch actuator rod and releases it from a locking means, allowing the mechanical clutch to be engaged by spring force. A pulley on the clutch output shaft winds up a flexible element which is connected to ring rail support and traversing means, thus lowering the rail to a bobbin doffing position. As the ring rail approaches the doffing position, a striker pin on the trip mechanism engages a lower switch roller and is moved to a position which returns the trip mechanism to the original position. The mechanism may also be used in a semi-automatic mode without the trip mechanism.

3,803,825

DEVICE FOR THE FINAL BINDING OF YARN ON BOBBINS FOR RING SPINNING AND TWISTING MACHINES

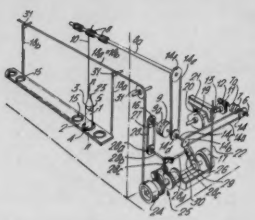
Mario Einaudi, Torino, Italy, assignor to Nazionale Cogne S.p.A., Torino, Italy

Filed Oct. 22, 1971, Ser. No. 191,933

Claims priority, application Italy, Oct. 26, 1970, 54311/70

Int. Cl. D01h *1/38*

U.S. Cl. 57—54 5 Claims



A device for the binding of thread on a bobbin in a ring spinning and twisting machine is disclosed in which a ring rail is associated with a plurality of spools mounted on vertical rotating spindles. Means are disclosed for reciprocating said ring rail along a vertical path in order to enable the yarn to be wound around the respective bobbin. The invention is characterized by feeding yarn to each bobbin from a feed roller, each feed roller being mounted on a common shaft which is driven through a suitable first transmission system from a main driving shaft. The reciprocal movement of the ring rail can be selectively driven by the same main driving shaft through the first transmission system which includes a first clutch device and means adapted to cause the reciprocation of the ring rail. Alternatively a third transmission system can be connected to the said first transmission through a second clutch device in order to cause the ring rail to be moved with a speed proportional to the delivery speed of the yarns fed by the feed rollers. The first and second clutch devices are associated with control means which can be actuated selectively by a manually operable control device or by an automatic control device actuated automatically as the ring rail reaches its uppermost position when the binding operation is completed. The first and second clutch devices are so arranged that the first clutch device is in its operative position when the second clutch device is disengaged and vice-versa.

3,803,826

METHOD FOR CONTINUOUSLY SETTING WOOL SILVER

Kazutomo Ishizawa; Yasunori Nagata, both of Osaka; Hirotaka Ito, Daito; Toyotaka Ishida, Settsu; Tohru Koide, Kobe, and Akio Sato, Hikone, all of Japan, assignors to Kanebo Kabushiki Kaisha, Tokyo, Japan

Filed July 18, 1972, Ser. No. 272,746

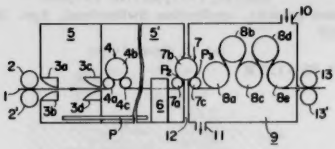
Claims priority, application Japan, July 19, 1971, 46-53791; Feb. 22, 1971, 46-18749

Int. Cl. B02g *1/00;* D02g *1/02*

U.S. Cl. 57—156 7 Claims

During the process of manufacture of a wool "top" among the entire worsted spinning operation, the sliver is first heated

by steaming in its state of containing moisture, and then is imparted false twist while steaming the resulting sliver under tension, and thereafter is dried, at a temperature lower than that of said steaming, by the use of an apparatus having, in series combination, a steaming chamber, a heating and false twisting



chamber and a drying chamber which are coupled to each other. By this method, the crimps of the fibers in the silver disappear to such an extent as can be recovered only by a specific crimp recovering step which is performed in the final finishing process.

3,803,827

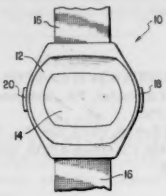
SOLID STATE ELECTRONIC WRISTWATCH

Dennis A. Roberts, Washington Boro, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Filed Feb. 1, 1973, Ser. No. 328,639

Int. Cl. G04b *19/24*

U.S. Cl. 58—4 A **20 Claims**



Disclosed is a solid state electronic wristwatch incorporating a calendar display. The same electro-optical elements are used for the calendar display as are used to display time. The principal components of both the time and calendar circuits may be formed on a single large scale integrated circuit chip. The watch is of modular construction for ease of assembly and reliability. Also disclosed is a setting magnet for the watch stored in the watch bracelet.

3,803,828

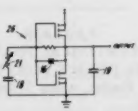
RESISTOR TRIM FOR QUARTZ OSCILLATOR

Eugene R. Keeler, Suffern, N.Y., and Robert C. Shapiro, Pompton Plains, N.J., assignors to Timex Corporation, Waterbury, Conn.

Filed Oct. 12, 1972, Ser. No. 297,151

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 AC **2 Claims**



This invention relates to a trimming arrangement for a quartz oscillator particularly suited for use in highly accurate quartz watches, wherein the oscillator output frequency is adjusted to a predetermined precise frequency by varying the resistance within the trimming arrangement. The variable resistor is deposited on a substrate eliminating the need for mounting a separate element as in conventional capacitor trimming circuits.

3,803,829

COIL STRUCTURE FOR ELECTRIC WATCHES

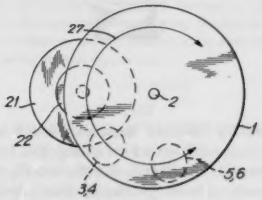
Yuki Tsuruishi; Okito Naito, and Masanao Matsuzawa, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 127,893, March 25, 1971, abandoned. This application Feb. 27, 1973, Ser. No. 336,298

Claims priority, application Japan, Mar. 31, 1970, 45-26529

Int. Cl. G04c *3/04*

U.S. Cl. 58—28 A **2 Claims**



A coil structure for an electric watch having a balance wheel formed with a pair of spaced discs on which are mounted two pairs of permanent magnets aligned in facing relation on said discs. Detecting and driving coils are wound coaxially and mounted separate from said balance wheel in the gap between said permanent magnets. The detecting and driving coils are mounted so that, at the center of oscillation of the balance wheel, most of the magnetic flux is interlinked with a respective side of the driving coil.

3,803,830

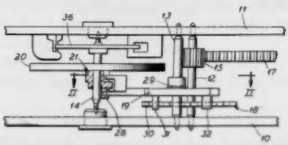
PLASTIC ESCAPEMENT LEVER

Robert R. Lawson, Somerset, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed June 29, 1972, Ser. No. 267,334

Int. Cl. G04b *15/00*

U.S. Cl. 58—116 R **8 Claims**

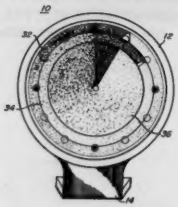


A plastic lever having plastic pallet pins projecting therefrom for cooperation with an escape wheel, the pallet pins each comprising a relatively small active portion supported by a substantially larger reinforcing portion with both portions being smoothly faired to cooperate with the escape wheel teeth in an anti-locking manner upon reverse power application to the escape wheel.

3,803,831
VISUAL INDICATION APPARATUS WITH ROTATABLE TRANSPARENT DISCS

Joseph Horzick, West Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 29, 1973, Ser. No. 392,838
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 R 5 Claims

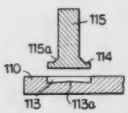


A novel rotary indicator apparatus which is particularly suitable for timepieces but which is adaptable for any application where derived information is to be visually displayed. For time-pieces two or more graduated discs are utilized in co-centric relation to one another. At least one of such discs is caused to rotate with respect to the other by having the respective discs exhibit a progressively decreasing color intensity but in opposite directions, a unique visual effect or traveling zone is evidenced to the viewer's eye as the discs rotate one on top of the other.

3,803,832
DIAL FOR WRIST WATCH AND A METHOD OF MAKING THE SAME

Noriaki Shimizu, 521-5, Imafuku, Ohaza, Saitamaken, Kawagoe, Japan

Filed Jan. 23, 1973, Ser. No. 326,023
Claims priority, application Japan, Feb. 1, 1972, 47-11541
Int. Cl. G04b *29/00*
U.S. Cl. 58—127 B 2 Claims

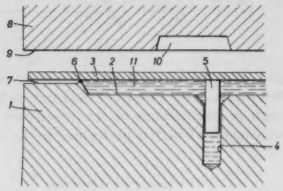


A dial for a wrist watch comprises a dial body formed of a flat plate of aluminum and rivet like pin members made of aluminum material and for securing supporting the dial plate body to a time-keeping mechanism. The head portion of each pin member is formed so as to fit into a recess formed on the reverse surface of the body and being integrally fixed to the recess by means of ultrasonic wave welding. Also, a method of making the dial for the wrist watch is characterized in that when the head portion of the pin member is joined to the recess, a chip of the ultrasonic wave welding machine is pressure bonded to the head portion to provide the ultrasonic wave vibration so as to integrally join the head portion to the recess.

3,803,833
WATCH DIAL WITH INTEGRALLY FORMED RAISED SYMBOLS

Pierre Richard, Porrentruy, Switzerland, assignor to Jap, S.A., Bure, Berne, Switzerland

Division of Ser. No. 817,970, April 21, 1969. This application Apr. 27, 1971, Ser. No. 137,990
Claims priority, application Switzerland, Apr. 26, 1968, 6236/68
Int. Cl. G04b *19/06*
U.S. Cl. 58—127 R 1 Claim

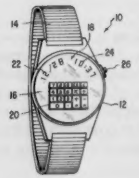


A watch dial having a dial plate with integrally formed raised symbols, the dial plate having a substantially homogeneously appearing background surface and the raised symbols having a top face and side surfaces which form sharp corners with the top face such that the raised symbols have a substantially different appearance from the dial plate background surface.

3,803,834
WRISTWATCH CALCULATOR

Robert O. Reese, Lancaster, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Filed Feb. 6, 1973, Ser. No. 329,973
Int. Cl. G04b *47/06, 19/30*
U.S. Cl. 58—152 R 22 Claims



Disclosed is a combination wristwatch and wrist calculator. The wristwatch comprises an eight digit electro-optical display indicating time and calendar information when in the time display mode and indicating the result of a computation when in the calculate mode. A manually operated mode switch controls the display and calculations are entered by way of a miniature keyboard on the watch face.

3,803,835
METHOD FOR STARTING ACTUATING MEMBER OF MACHINE AND DEVICE FOR PERFORMING IT

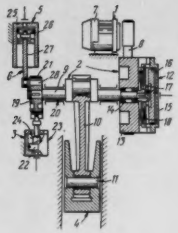
Grigory Matveevich Rodov, ulitsa 3, Internationala, 9 kv. 25, Voronezh, U.S.S.R.

Filed Nov. 8, 1972, Ser. No. 304,831
Int. Cl. F01b *21/00*
U.S. Cl. 60—6 4 Claims

The kinetic energy of a accelerated driven link and actuating member connected therewith is accumulated during braking, the energy being subsequently utilized to accelerate the

driven link prior to its coupling with a driving link up to a speed which is close to the speed of the latter, thus providing a non-shock and, actually, non-slipping coupling between the driven and the driving links of the transmission.

The device comprises an accumulator connected to a transmission driven link through a converter which serves to deliver the energy taken off in the course of braking the accelerated link and actuating member to the accumulator and therefrom - to the driven link to impart so as the latter a speed which is close to the speed of the driving link prior to their coupling.

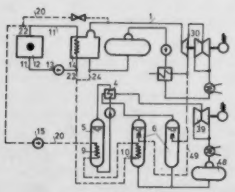


3,803,836

THERMAL POWER PLANTS AND METHODS FOR OPERATING THE SAME

Paul Viktor Gilli, Vienna, Austria, assignor to Waagner-Biro A.G., Vienna, Austria

Filed Oct. 4, 1971, Ser. No. 185,938
Claims priority, application Austria, Oct. 2, 1970, 8903/70
Int. Cl. F01d *13/00*
U.S. Cl. 60—102 **25 Claims**



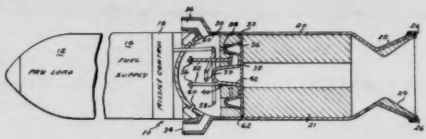
A thermal power plant and method of operating the same wherein the plant includes a primary heat source from which steam is delivered through a primary conduit system to a primary power-output. A secondary power-output is driven with steam from an accumulator system. Steam is taken from primary conduit system, at a point between the primary heat source and primary power-output, and is delivered to the accumulator system for superheating the steam delivered by the latter to the secondary power-output.

3,803,837

INTEGRAL ROCKET-RAMJET WITH DEPLOYABLE FLAMEHOLDER

Edward T. Curran, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 4, 1972, Ser. No. 298,092
Int. Cl. F02k *3/00*
U.S. Cl. 60—245 **2 Claims**



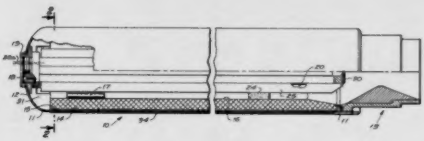
An integral rocket-ramjet missile having a flameholder stored in a flow distribution plate during rocket boost operation. The flameholder is moved rearward by ram air to stabilize the flame during ramjet operation.

3,803,838

APPARATUS AND METHOD OF TERMINATING THRUST OF A ROCKET MOTOR

Myron Morgan, Penryn; Steven D. Mitchell, Carmichael, and Conrad R. Platt, Huntington Beach, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed July 28, 1970, Ser. No. 58,903
Int. Cl. F02k *9/04*
U.S. Cl. 60—254 **3 Claims**



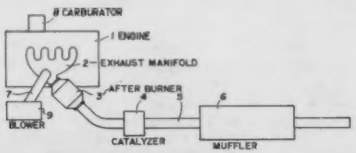
Combustion and thrust of a solid propellant rocket motor are terminated by igniting a pyrotechnic material contained within a tube of quenchant fluid such as water located within the hollow propellant grain within the motor chamber. Burning of the pyrotechnic pressurizes the quenchant, bursting its container, so that it is ejected at high velocity, in all directions in the chamber.

3,803,839

METHOD FOR THE DETOXIFICATION OF EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Andres Santiago, Augsburg, Germany, assignor to Zeuna-Staerker KG, Augsburg, Germany

Filed Sept. 13, 1971, Ser. No. 179,678
Claims priority, application Germany, Sept. 12, 1970, 2045233
Int. Cl. F01n *3/16*
U.S. Cl. 60—274 **4 Claims**



Exhaust gases of internal combustion engines are detoxified by a method in which they are passed first through an after

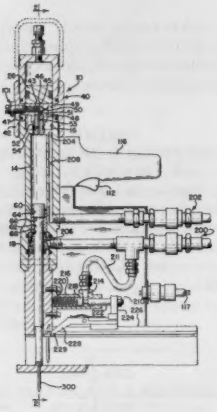
burner, and then through a catalyzer. Burning in the after burner to remove hydrocarbons and carbon monoxide is limited so that enough carbon monoxide remains to react with nitrogen oxides in the catalyzer.

3,803,840

POWER DRIVER DEVICE

Jan Toczycki, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 22, 1972, Ser. No. 317,853
Int. Cl. F15b *1/02*
U.S. Cl. 60—371 **22 Claims**



A pressure fluid power driving device for driving studs, nails or the like having a gas chamber including an accumulator piston movable against the force of the gas in the chamber by the action of a noncompressible fluid against the accumulator piston. The invention further relates to the use of noncompressible fluid acting at a first, relatively low pressure to force a brake spool to carry a ram upwardly into sealing engagement with a seat element. The ram is propelled downwardly with great velocity when noncompressible fluid at a second, relatively high pressure, enters the cylinder to urge the accumulator piston against the bias of the compressed gas until a predetermined pressure level is achieved within the cylinder wherein an automatic pressure relief valve system breaks the seal between the top of the drive piston and the seating element allowing the full force of the compressed gas to act on the upper surface of the drive piston through the noncompressible fluid.

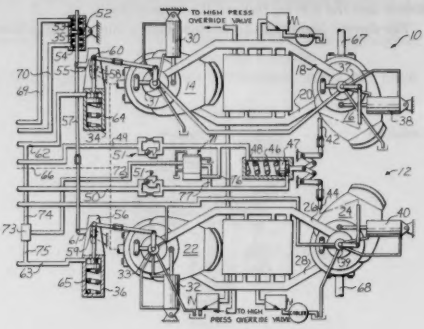
3,803,841

STEERING ACTUATED MOTOR DISPLACEMENT CONTROL VALVE

Rodney R. Erickson, Joliet, and Gordon W. Johnson, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 10, 1972, Ser. No. 270,269
Int. Cl. F16h *39/46*; B62d *11/04*
U.S. Cl. 60—421 **13 Claims**

A track drive vehicle incorporating a pair of hydrostatic transmissions in the drive train for individual track drive is provided with a control system that is responsive to the vehicle steering control to automatically proportion transmission



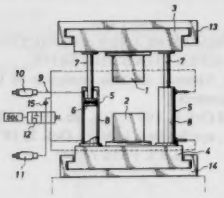
setting during a turn to prevent turns at excessive speeds and also to prevent over-pressurization of the hydrostatic drive system.

3,803,842

DEVICE FOR KEEPING METAL MOLD IN A CLAMPED STATE

Katashi Aoki, 6037, Oaza Minamijo, Nagano-ken, Japan

Division of Ser. No. 145,385, May 20, 1971, Pat. No. 3,700,765. This application Aug. 11, 1972, Ser. No. 279,906
Int. Cl. F15b *15/17*
U.S. Cl. 60—416 **1 Claim**



A method and device for keeping metal mold in a clamped state characterized in that the mold-halves of the metal mold are respectively coupled to a plurality of hydraulic cylinders and pistons, the mold-halves are forced to close so that the displacement of the pistons causes a hydraulic fluid to flow from one space to the other in the hydraulic cylinders and also to an accumulator through a control valve, and upon the completion of the closure, shifting the control valve to another position so that the remaining fluid in the above mentioned one space is further evacuated to another accumulator at a low pressure with the simultaneous communication maintained between the other space of the hydraulic cylinders and the first accumulator, whereby a pressure difference is created between the two spaces separated by the pistons, and the mold-halves are thereby clamped.

3,803,843

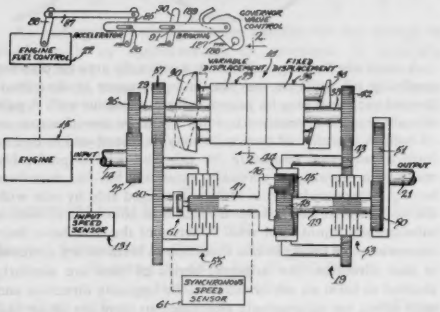
HYDROMECHANICAL TRANSMISSION

Bengt E. Nyman, Redmond, Wash., and Larry T. Becker, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 171,925, Aug. 16, 1971, Pat. No. 3,733,931. This application Jan. 22, 1973, Ser. No. 325,918
Int. Cl. F02b *41/00*
U.S. Cl. 60—19 **25 Claims**

An infinitely variable hydromechanical transmission for a highway truck or the like including a hydraulic pump and

motor together with a mechanical differential, means for varying the displacement of one of the hydraulic units, a low range clutch for transmitting power directly from the hydraulic units to the output shaft in a purely hydrostatic mode, a high range clutch engageable synchronously under full load or establishing split power paths in a hydromechanical mode, and control means for actuating the clutches and the displacement varying means. The control system includes a governor valve for controlling the displacement varying means, an acceleration control for simultaneously establishing an engine throttle setting and a governor valve setting, a charge pump for supplying charge fluid under pressure, an engine speed sensing valve for receiving charge fluid and supplying pressure proportional to engine speed to actuate the governor valve in opposition to the manual bias for establishing a transmission ratio to control engine speed, a pressure regulating valve for receiving charge pressure and supplying control pressure to the governor



responsive to a pressure signal from the engine speed responsive valve in a manner to establish maximum control pressure at approximately 70 percent of rated engine speed, a drive selector valve for establishing neutral, low range forward, reverse and high range forward, a shift valve for controlling energization of the high range clutch and deenergization of the low range clutch, a shift qualifying valve controlled by the engine speed responsive valve for supplying a signal to the shift valve indicating attainment of predetermined minimum engine speed, a synchronous speed sensitive valve for supplying a shift signal to the shift valve when the speed of the output shaft exceeds the speed of the input shaft, a sequence valve controlled by the shift valve for reversing the displacement varying means when shifting from low range to high range, a reshift delay valve for preventing immediate downshift from high range due to transitory signals, and shunt valve means for connecting opposite sides of the displacement varying means in event of panic stops.

3,803,844

HYDRAULIC TRANSMISSION SYSTEMS

Albert Leslie Gatiss, Sutton Coldfield, England, assignor to Brockhouse Engineering Limited, Stafford, England

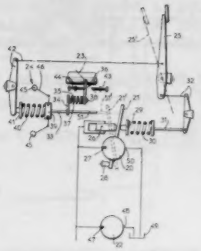
Filed Jan. 18, 1973, Ser. No. 324,642

Claims priority, application Great Britain, Jan. 22, 1972, 3171/72

Int. Cl. F16h *39/46*

U.S. Cl. 60—491 **10 Claims**

A control system in hydraulic transmission apparatus comprising a prime mover, a variable swept volume positive displacement pump driven by said prime mover, a hydraulic machine operated by said pump, said machine being subjected, in use, to variable loading and being required to operate at different rates; the control system comprising, pump control means for varying the swept volume of the pump, prime mover control means for varying the power supplied to the prime mover, one operating element common to both the pump and prime mover control means and arranged to effect simultaneous control of both the swept volume of the pump and of the power supplied to the prime mover, said pump control means being arranged to effect reduction in the swept volume of the pump when the output pressure thereof exceeds a predetermined value dependent on the displacement of the operating element, said pump control means permitting the swept volume to be so reduced despite displacement of the operating element to, or towards, the position



calling for maximum swept volume, said prime mover control means including a speed responsive governor and being arranged to control the power supplied to the prime mover by controlling the speed setting of the governor and means responsive to an element associated with the prime mover control means for effecting reduction in the swept volume of the pump when the torque load from the pump on the prime mover commences to exceed the latter's maximum available torque output.

3,803,845

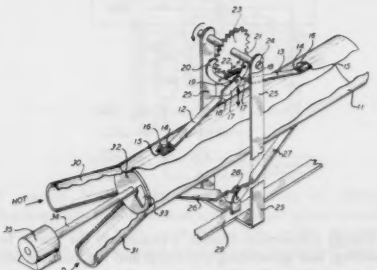
THERMAL ENGINE

Clifford E. Dennis, 14 Hamburg Tnpk., Hamburg, N.J.

Filed June 8, 1973, Ser. No. 368,342

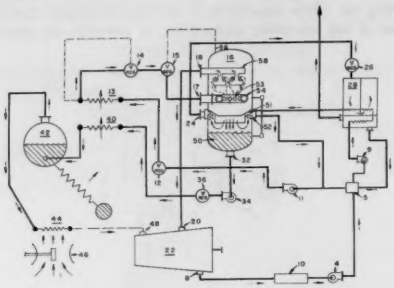
Int. Cl. F03g *7/06*

U.S. Cl. 60—527 **5 Claims**



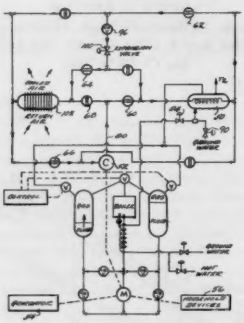
A thermal engine having a pair of levers defining the sides of a triangle, the levers being connected together at their top-ends to define the apex of the triangle, and the levers attached at the other ends to a conduit made of material having a high coefficient of thermal expansion and contraction, which conduit defines the base of the triangle. A pair of opposed pawls attached to the connected ends of the levers, and engaged with a ratchet wheel for rotation in response to the expansion and contraction of the conduit.

3,803,846
WASTE HEAT RECOVERY PROCESS
Samuel Letvin, 112 Shelbourne Dr., York, Pa.
Filed June 14, 1971, Ser. No. 152,705
Int. Cl. F01k *19/10;* **F28f** *27/02*
U.S. Cl. 60—685 **10 Claims**



A process is described for the recovery of waste heat by means of a novel combination of fluid and steaming economizer units and a modified flash steam vapor generator deaerator whereby more efficient and controlled extraction of heat from low temperature gases is affected.

3,803,847
ENERGY CONVERSION SYSTEM
Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz.
Filed Mar. 10, 1972, Ser. No. 233,460
Int. Cl. F01k *27/00*
U.S. Cl. 60—721 **1 Claim**

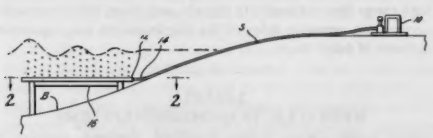


An energy conversion system, particularly for use in heating, cooling, and generating electrical and mechanical power for an area such as a dwelling. In one embodiment, vapor is alternately directed into one of two reservoir tanks so that working fluid in that tank is forced out of that tank by the vapor pressure and through a hydraulic motor, which powers a compressor and/or other devices such as an electrical power generator, garbage disposal, etc., before it returns to refill the other tank. The system includes a closed loop circuit involving a heat pump compressor for circulating fluid to heat and cool air within a building or the like. When the loop is set in a cooling configuration, compressed fluid passes through a first heat exchanger rejecting heat, and then through an expansion valve to a second heat exchanger, cooling the air about that exchanger before returning to the compressor. When the loop is set in a heating configuration, the compressed fluid in its gaseous state passes first through the second heat exchanger, where it transmits heat to the surrounding air, through the expansion valve and then through the first exchanger, where it receives heat not converted into shaft work by the hydraulic motor before returning to the compressor.

3,803,848
BOOM ARRANGEMENT FOR CONFINING OIL
Gustaaf Van't Hof, 10021 Lesterford Ave., Downey, Calif.
Continuation-in-part of Ser. No. 829,303, June 2, 1969, Pat. No. 3,611,728. This application Oct. 12, 1971, Ser. No. 188,313
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **17 Claims**

A vertically floating wall having a generally arcuate plan for confining oil spills or the like in open water is described. Several such arcs may be joined to form a sinuous wall. A pair of walls may be connected to form a V to be towed across an oil spill. A plurality of such walls may be joined end to end to form a polygonal enclosure for oil. The wall is preferably made by a plurality of vertically extending bar-like members having a trapezoidal cross section arranged side by side with the non-parallel sides of the trapezoid in abutment to form a substantially liquid-tight wall. A series of the bars have their narrower sides facing in one direction to form an arc concave in that direction. An adjacent series of bars are similarly abutted to form an arc concave in the opposite direction and such series are successively alternated to form the sinusoidal plan. A prestressing cable extends through in the trapezoidal members along the length of the sinusoidal assembly for applying a force towards the concave side of each of the arcs to thereby form an elastically stable structure.

3,803,849
METHOD AND APPARATUS FOR DAMPING WAVE ACTION
Frank Allan Bryant, Houston, Tex., assignor to The Offshore Company, Houston, Tex.
Filed July 27, 1972, Ser. No. 275,723
Int. Cl. E02b *3/04*
U.S. Cl. 61—1 R **1 Claim**



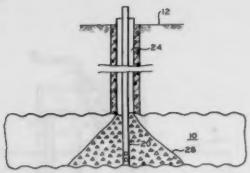
A method of and apparatus for damping wave action on a section of water including injecting sufficient amount of air in discrete, minute bubbles under the water to dissipate a major portion of the wave energy by irreversible thermodynamic compression and expansion of such bubbles. The apparatus includes a supply of air, bubble generating means positioned in the water and having bubble generating elements to generate a multitude of minute, discrete bubbles which are sufficiently small to damp the wave action. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,803,850

UNDERGROUND STORAGE CAVERN WITH DAMAGE-PROOF TUBING

Hurshel V. Hendrix, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 8, 1972, Ser. No. 287,250
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **8 Claims**



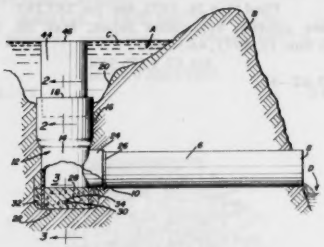
An underground storage cavern suitable for the storage of fluids such as hydrocarbons or ammonia is normally penetrated by a tube through which a second fluid can be admitted to the cavern for the purpose of displacing the stored fluid. This tube can be protected from damage caused by cave-ins by surrounding the tube with a mound of comminuted material such as crushed rock.

3,803,851

ADJUSTABLE WATER LEVEL AND EROSION CONTROL DEVICE

Hosea J. Soileau, 614 N. Coreil St., Ville Platte, La.

Filed Aug. 21, 1972, Ser. No. 282,007
Int. Cl. E02b *9/04*
U.S. Cl. 61—17 **4 Claims**



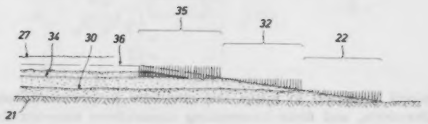
An adjustable levee preserving and erosion minimizing device for controlling the level of levee-entrapped irrigation water in a first field or area located, for example, on one side of a marginal levee embankment and which, in addition, serves to transfer and drain some or all of the water from the first area to a second lower level area or ditch on the other side of the levee embankment. This improvement is characterized, broadly stated, by conduit means embodying a drainage pipe which is adapted to be submerged and firmly embedded in a bottom portion of the levee embankment, said pipeline having a constantly open discharge end in communication with the second area or ditch and an intake end. A water intake coupling is provided and has a horizontal portion aligned and communicatively united with the intake end of the drainage pipeline. In addition there is a complemental vertical portion and, as is obvious, the coupling is also adapted to be embedded and, generically construed, the lower end portion of the coupling is provided with suitably weighted hold-down and anchoring means. Although the pipeline and coupling can be conjointly used for complete drainage and erosion control, a sleeve is provided and fitted into an upper end portion of the vertical portion of the coupling. The sleeve has an upper end portion which is open and projects upwardly above the bottom of the entrapped water confining area and functions to automatically control the overflow and level of the water therein. In addition to its use as an adjustable water level control device the construction is such that it can also be used for erosion control at which time the adjustable sleeve and complemental gasket are not used whereby to thus provide a simple weighted drain and erosion control device.

3,803,852

PROCESS FOR BUILDING AN ISLAND

Rafael Fernandez-Luque, Rijswijk, and Johan M. Goppel, Delft, both of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 9, 1973, Ser. No. 349,364
Claims priority, application Netherlands, Apr. 11, 1972, 7204805
Int. Cl. E02b *1/00, 3/04, 3/18*
U.S. Cl. 61—46 **2 Claims**



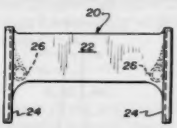
A foundation is built up in a body of water by depositing artificial seaweed in a specified area on the bottom of the body of water then depositing sand particles in the area defined by the seaweed, and repeating the process in successively smaller areas so that a foundation such as an island is built up.

3,803,853

DOCK FENDER STRUCTURE

Felix Kuus, Koekuk, Iowa, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 24, 1972, Ser. No. 274,351
Int. Cl. E02b *3/22*; **F16f** *1/44*
U.S. Cl. 61—48 **11 Claims**



A marine dock fender element having an elastomeric deflection body in connection with support plates at each end of the deflection body with deflection guide members associated with each support plate and the deflection body.

3,803,854

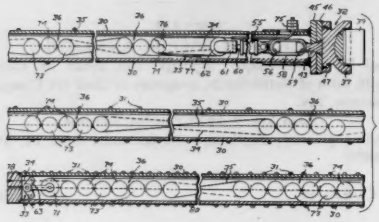
EXPANSIBLE MANDRELS FOR USE IN DRIVING OR WITHDRAWING TUBULAR PILES

Charles L. Guild, 7 Stone Tower Ln., Barrington, R.I., and Willard B. Goodman, P.O. Box 62, Newport, Oreg.

Continuation-in-part of Ser. No. 824,631, May 14, 1969, abandoned. This application June 10, 1971, Ser. No. 151,786
Int. Cl. E02d *7/30*
U.S. Cl. 61—53.72 **111 Claims**

Expansible mandrels are disclosed for use in driving or withdrawing tubular piles and the like, said mandrels comprising sections with a head connected to and joining their upper

ends, and with at least one means below said head operable to vary the spacing of the mandrel sections between pile-entering and pile-gripping relationships. The operating means include a plurality of members within the mandrel and spaced lengthwise thereof, flexible means in trained engagement with the members and operable on a pull thereon in a predetermined direction to move the members in predetermined directions, and force-transmitting connections between the members and the mandrel sections to transmit opposite transverse forces thereto urging them into one of said relationships on such movement of the members. The pull on the flexible means is established in effecting either one or both operative relationships by power operated means.



3,803,855

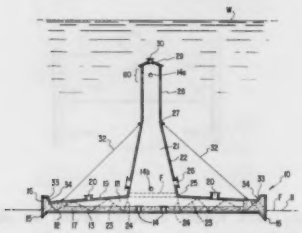
SUBMERGED OIL STORAGE TANK

Arick S. Malkiel, 94-09 68th Ave., Forest Hills, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,400

Int. Cl. E02b *17/00;* **B65d** *89/10*

U.S. Cl. 61—46.5 **13 Claims**



A submerged liquid storage system comprises a foundation base resting on the ocean floor and including a ballastable platform having integrally mounted thereon an upwardly extending tapering hollow shaft interlocking with a tank enclosure comprising an assembly of interconnecting and intercommunicating horizontal and sloping tubular struts braced against said shaft, covered by a flexible sheet of elastomer material serving as an sealed tank wall open on the bottom to sea and forming with the said tubular struts and hollow shaft a liquid storing tank, with the said tank being protected from marine environs by an outer timber envelope.

3,803,856

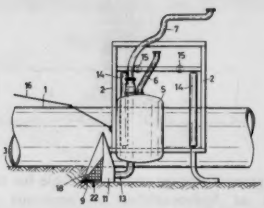
PROCESS AND APPARATUS FOR ACHIEVING THE MECHANICAL TRENCHING OF A PIPE-LINE IN A SUB-AQUEOUS DEPTH

Giovanni Faldi, via Forese Donati, 27, Firenze, Italy

Filed Dec. 20, 1971, Ser. No. 209,649

Int. Cl. F16l *1/00;* **E02b** *5/02;* **E02h** *3/88*

U.S. Cl. 61—72.4 **5 Claims**



The invention relates to a process and apparatus for the mechanical entrenching of a pipe-line in a sub-aqueous bed, wherein two or more dredging devices are positioned at the two sides of the pipe-line and a bridging framework is provided connecting said dredging devices, said framework being pulled astride the pipe-line while the dredging devices are in action, so that the pipe-line, aided by its own weight, sinks slowly into the trench as it is being dug.

3,803,857

REFRIGERATION SYSTEM

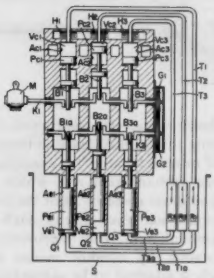
Yoshihiro Ishizaki, 702, Yamanouchi, Kamakura, Japan

Filed May 26, 1972, Ser. No. 257,167

Claims priority, application Japan, May 28, 1971, 46-36325; Nov. 12, 1971, 46-90440

Int. Cl. F25b *9/00*

U.S. Cl. 62—6 **13 Claims**



In a multiphase refrigeration system based on the Kirk cycle and operating with a refrigerant, expansion pistons and compression pistons are respectively connected to two separate crankshafts mechanically intercoupled with each other for synchronous rotation with a specific phase angle therebetween, and an appropriate number of heat exchangers, regenerators, and cold stations are installed between expansion and compression spaces on which the expansion and compression pistons act.

3,803,858

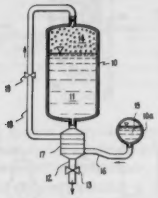
GAS TRANSFER SYSTEM FOR LIQUID FUELS

Michael Simon, Hamburg-Othmarschen, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munchen, Germany

Continuation-in-part of Ser. No. 79,288, Oct. 8, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,548

Int. Cl. F17c *7/02*

U.S. Cl. 62—52 **2 Claims**



Liquid fuels are transferred from a fuel tank by the pressure of a liquified cyrogenic gas vaporized by heat exchange with the liquid fuel.

3,803,859

REFRIGERATED VEHICLE

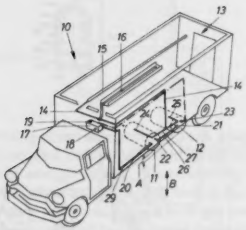
Jurgen Kleffmann, and Wilfried Duesberg, both of Frankfurt, Main, Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Oct. 2, 1972, Ser. No. 293,830

Claims priority, application Germany, Oct. 1, 1971, 7137319

Int. Cl. F25b *19/00*

U.S. Cl. 62—55 **3 Claims**



A refrigerated vehicle has at least two successive underfloor tanks for liquefied gases at low temperature wherein each tank has a filling aperture, an overflow aperture, and a discharge aperture. The overflow aperture of one tank is connected by a pipe to the filling aperture of the next successive adjacent tank and the aperture of all tanks are interconnected by way of a common pipe from which a discharge pipe is branched off, and each tank being situated higher than its next successive adjacent tank.

3,803,860

FREEZE PROCESS FOR MAKING FRESH WATER FROM BRINE

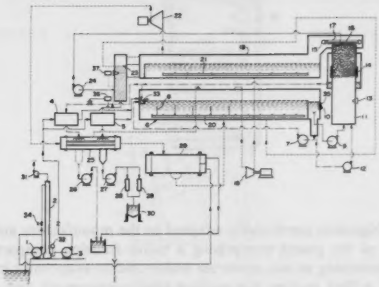
Yoshinori Nagashima; Keizo Hayashi; Mamoru Inoue; Takai Yamazaki; Shinichi Maeda, all of Okayama; Shigetake Kawasaki, Kanagawa, and Masaru Owa, Tokyo, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1972, Ser. No. 247,289

Claims priority, application Japan, May 22, 1971, 46-35066

Int. Cl. B01d *9/04*

U.S. Cl. 62—58 **1 Claim**



A process for making fresh water from brine by freezing the brine and an apparatus for practicing said process, in which feed brine is fed into a crystallization tank, together with a recycle of brine and a return flow of brine from a washing tower, and contacted by a refrigerant, whereby ice particles are formed, and said ice particles are washed in the washing tower with a recycle of production fresh water and melted in a melting tank (melter) by the circulating vapor refrigerant, and the resultant fresh water is ridden of the refrigerant in a deaerator and an absorber and discharged as the product fresh water, while the refrigerant removed from the fresh water is recycled for reuse, said crystallization tank being provided therein with a plurality of baffle plates arranged in the longitudinal direction in spaced relation to be submerged below the liquid level so that the condition may be created in said crystallization tank, in which the brine moves in the fashion of a piston flow and the ice particles move while being mixed with the brine in a state intermediate of piston flow and perfect mixing by its density.

3,803,861

CRYSTALLIZATION CONCENTRATION PROCESS

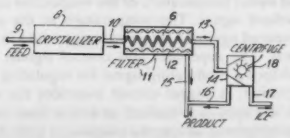
Neophytos Ganiaris, 3671 Hudson Manor Ter., Riverdale, N.Y.

Division of Ser. No. 642,467, May 31, 1967, abandoned, which is a continuation-in-part of Ser. No. 512,365, Dec. 8, 1965, abandoned, which is a continuation-in-part of Ser. No. 321,020, Nov. 4, 1963, Pat. No. 3,283,522. This application June 2, 1971, Ser. No. 149,387

Claims priority, application Germany, June 8, 1967, 1619814; Great Britain, June 14, 1966, 26379/66

Int. Cl. B01d *9/04*

U.S. Cl. 62—123 **1 Claim**



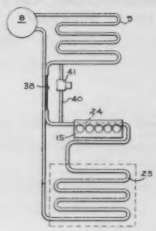
After crystallization, a fluid-crystal slurry is concentrated in a filter before a more final crystal separation in a centrifuge.

3,803,862

REFRIGERATOR INCLUDING AUTOMATIC ICE MAKER

Frank A. Schumacher, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 13, 1972, Ser. No. 314,695
Int. Cl. F25c 1/06
U.S. Cl. 62—137 4 Claims



A refrigerator particularly adapted to the manufacture and storage of ice pieces comprising a below-freezing compartment containing an automatic ice maker and an evaporator including a first section for cooling the compartment and a second section heat exchanged with the ice maker mold.

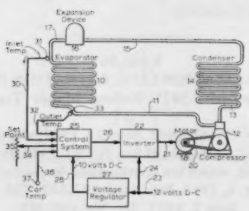
Means are provided for periodically conducting hot compressed refrigerant through the evaporator to aid in melting the ice pieces free of the mold and to defrost the first evaporator section. The operation of the refrigeration system and the ice maker are controlled by a single thermostat associated with the ice maker mold.

3,803,863

CONTROL SYSTEM FOR REFRIGERATION COMPRESSOR

Thomas C. Jednacz, and Dean K. Norbeck, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 20, 1972, Ser. No. 264,686
Int. Cl. F25b 1/00
U.S. Cl. 62—209 8 Claims



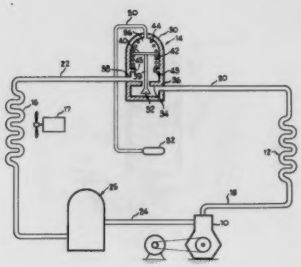
A refrigeration control system for a closed vapor cycle refrigeration circuit includes means for sensing the inlet temperature and outlet temperature of the evaporator coil to provide a superheat signal. The temperature in the controlled space is compared against a set point temperature to provide a control signal. The superheat and control signals are compared to produce a modulating signal for regulating the compressor operation. A trigger circuit overrides the superheat signal when the system is started, at which time there is no temperature difference across the evaporator coil. A limit circuit overrides the control signal to provide zero capacity output of the system when the superheat equals zero.

3,803,864

AIR CONDITIONING CONTROL SYSTEM

Kenneth W. Cooper, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 7, 1972, Ser. No. 269,637
Int. Cl. F25b 41/04
U.S. Cl. 62—217 1 Claim



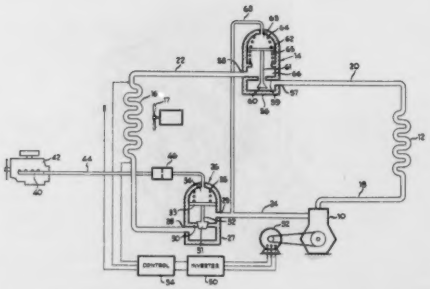
A refrigerant control system, particularly useful for air conditioning apparatus, including means for operating the system with a relatively high evaporator pressure during the time the temperature within the cooled space is being reduced to its desired level. While such temperature level is being reduced, a constant pressure expansion device is adjusted to maintain the control point at a lower temperature (and pressure) to effect dehumidification.

3,803,865

REFRIGERATION CONTROL SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 20, 1972, Ser. No. 264,649
Int. Cl. F25b 41/04
U.S. Cl. 62—217 2 Claims



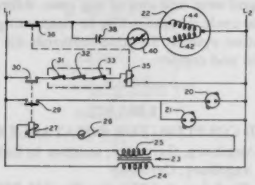
A refrigeration control system, useful for air conditioning apparatus, including means for reducing the evaporator pressure for some predetermined time period after the compressor is started. After sufficient time has elapsed to allow the temperature in the cooled space to reach a predetermined "normal" level, the evaporator pressure (and temperature) is increased and maintained slightly above the temperature at which evaporator coil freeze-up can occur.

3,803,866

START WINDING PROTECTION DEVICE

Vincent T. Barry, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,923
Int. Cl. F25b *1/00*
U.S. Cl. 62—230 **2 Claims**



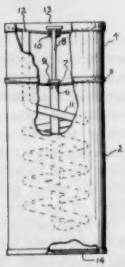
An air conditioning system is provided to supply treated air to an area. The system includes a refrigeration unit comprising a motor driven compressor, a condenser, an evaporator and expansion means. The motor includes a run winding and a start winding connected in parallel. The start winding has a safety device operably connected thereto to limit the current flowing through the start winding when the current flowing through the safety device exceeds a predetermined magnitude. The safety device is further operable to thereafter permit normal flow of current to the start winding when the current flowing thereto has been reduced to a predetermined level.

3,803,867

THERMODYNAMIC BEVERAGE COOLING UNIT

Samuel C. Willis, 5419 Hickory Hill Rd., Louisville, Ky.

Filed Aug. 31, 1972, Ser. No. 285,514
Int. Cl. F25d *3/10*
U.S. Cl. 62—294 **8 Claims**



Beverage cooling apparatus utilizing such gaseous coolants as carbon dioxide and chlorofluorohydrocarbon refrigerants are the subject of several patents. These cooling units entail a cooling coil adapted to be positioned within the beverage in combination with a reservoir from which gas passes through the cooling coil surrounded by the liquid beverage. The cooling apparatus herein is of the type including a reservoir and a cooling unit, but it is improved to make greater use of the latent heat of vaporization.

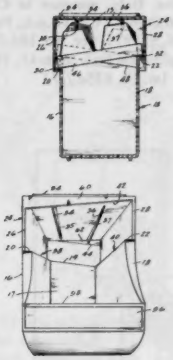
3,803,868

ICE CUBE EJECTOR DEVICE

Joseph P. Tunzi, Galesburg, and Clifford A. Sisko, Batavia, both of Ill., assignors to Admiral Corporation, Chicago, Ill.

Filed Sept. 14, 1971, Ser. No. 180,396
Int. Cl. F25c *1/24*, *5/06*; B65b *3/06*
U.S. Cl. 62—320 **2 Claims**

This invention provides an ice cube ejecting device for releasing and storing ice cubes from a flexible twist-type tray. The device comprises: a container having two sides with outwardly extended top edges, the top edges being arranged in horizontal inclined planes transverse to one another; a cover mounted on the container, the cover having downwardly extending parallel sides which are attached to the corresponding top edges of the container, the cover having at least one open end arranged to form with the container an opening in the device, the cover forming with the outwardly extended edges a pair of inner ramps, the ramps being at relatively different an-



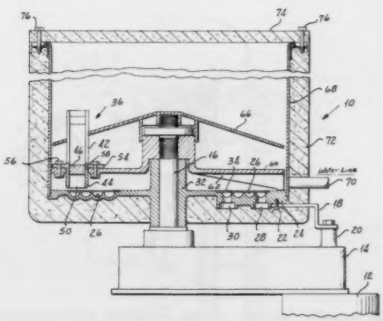
gles between the front and rear of the device; and a pair of spaced parallel ribs projecting downward from the inner upper surface of the cover, the ribs having edges inclined to lie substantially parallel to the adjacent ramp between the front and rear of the device, whereby when a filled ice-cube tray is placed invertedly in the opening of the device and moved along the ramps completely into the device, a twisting action is produced sufficient to twist one end of the tray with respect to the other to release the ice cubes from the tray into the container.

3,803,869

PLATE TYPE ICE MAKER

Charles G. Neumann, Palatin; Harvey R. Krueger, Carpentersville, and Walter Panock, Addison, all of Ill., assignors to Reynolds Products, Inc., Schaumburg, Ill.

Filed Jan. 30, 1973, Ser. No. 327,985
Int. Cl. F25c *1/14*
U.S. Cl. 62—320 **22 Claims**



A plate type ice maker for forming chunks of hard ice in which a member provided with an ice-forming passage having a cutting edge at one end thereof is moved over a plane freezing surface to cause ice crystals scraped from the freezing sur-

face by the cutting edge to be forced into the forming passage in which they are subjected to compressive forces sufficient to form a rod of hard ice which emerges from the other end of the passage and which engages a breaker surface which fractures the rod to form a hard piece of ice.

3,803,870

MACHINE FOR THE INSTANTANEOUS PRODUCTION OF ICE CREAM OF ONE OR MORE FLAVOURS

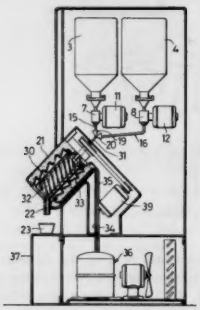
Loris Conz, Pordenone, Italy, assignor to Costruzioni Meccaniche COSMEC di Pighin e Conz S.n.c., Pardenone, Italy

Filed Oct. 5, 1971, Ser. No. 186,716

Claims priority, application Italy, Oct. 15, 1970, 31038/70

Int. Cl. F25c 7/12

U.S. Cl. 62—342 **1 Claim**



A machine for the automatic production of ice cream in which a plurality of tanks for flavouring substances are connected with a freezing chamber through duct and valve means, and means are provided so that the total amount of flavouring substances delivered for each unit batch of ice cream produced is constant, independently from the number of types of flavouring substances delivered.

3,803,871

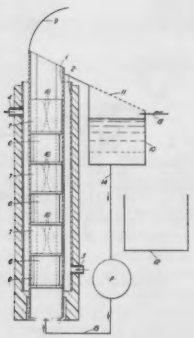
ICE-MAKING APPARATUS

John Tadeusz Karas, 3 Frogmore Grove, Blackwater, Camberley, Surrey, England

Filed Sept. 20, 1972, Ser. No. 290,467

Int. Cl. F25c 1/04

U.S. Cl. 62—348 **8 Claims**



An ice-making apparatus comprises a tube of high thermal conductivity material surrounded by a jacket and enclosing successive rings or collars of low thermal conductivity and high thermal conductivity materials alternatively. Water flows through the tube and the jacket forms the evaporator of a refrigeration system. Ice blocks are thereby formed within the high thermal conductivity rings and are subsequently released by disconnecting the jacket from the refrigeration system and flushing the jacket with a hot gas supply, whereupon the released blocks are expelled by the water flow and are collected on a grid near one end of the tube. After expulsion of the blocks the cycle is repeated by re-connecting the jacket to the refrigeration system. Suitable materials for the rings are polypropylene and copper.

3,803,872

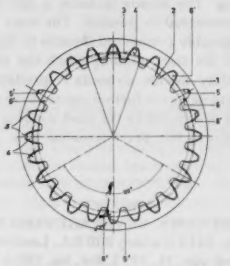
TOOTHED COUPLING FOR ROTATABLE MEMBERS

Albin Wolf, Augsburg, Germany, assignor to Zahnraderfabrik Renk AG, Augsburg, Germany

Filed Apr. 6, 1972, Ser. No. 241,550

Int. Cl. F16d 3/18

U.S. Cl. 64—9 R **5 Claims**



A toothed (spline) coupling for torque transmission between rotatable members comprises a sleeve formed as an internal gear (toothed body) snugly receiving an externally toothed wheel. The teeth of the sleeve define a pitch annulus deviating from the circular and coinciding with the pitch circle of the inner externally toothed gear in three locations equispaced around the coupling's rotation axis, i.e. at angles of 120°. Except at these three locations the pitch annulus of the sleeve lies outside the inner gear's pitch circle. In this manner only three teeth of the inner gear fit snugly into the splines of the sleeve. On application of torque to the coupling the sleeve deforms and most of the teeth of the gear fit into the splines for best torque transmission. It is also possible to form the gear wheel with three teeth lying on a pitch circle and all of its other teeth lying slightly inside this circle. In such an arrangement the teeth and splines are spaced at up to 60° from one another.

3,803,873

UNIVERSAL JOINT REPAIR ASSEMBLY

William W. Goller, Defiance, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

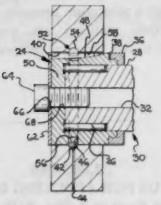
Filed July 21, 1972, Ser. No. 274,089

Int. Cl. F16d 3/26

U.S. Cl. 64—17 A **8 Claims**

A universal joint construction is provided which includes a replacement bearing cup assembly capable of being assembled with a yoke and a trunnion in a predetermined position. The assembly can take place in the field or shop without special tools or equipment. The replacement bearing cup has an outer annular groove which is located so as to be aligned with a corresponding groove in the bore of the yoke arm when properly

positioned in the yoke arm relative to a cross member of the universal joint. The replacement assembly includes a



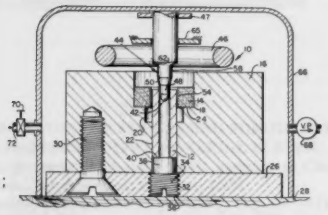
preformed ring which is effective to hold the bearing cup in the bore by extending into both the annular groove of the cup and the annular groove of the bore.

3,803,874

METHOD OF MAKING GLASS SEALS

Peter W. Charnley, Doylestown, and David R. Crichton, Furlong, both of Pa., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 17, 1972, Ser. No. 235,735
Int. Cl. C03b *23/20*
U.S. Cl. 65—36 **3 Claims**



A unique hermetic seal to join an inner wall of a ring shaped member made of a semi-conductor silicon material and a glass tube which is positioned within and spaced away from the inner wall of the ring uniformally heating the ring and the tube with the assistance of a carbon block which surrounds these parts as a heat transferring agent to change the glass from a brittle to a ductile state and applying the weight of a tapered mandrel against the inner wall of the ductile tube so that the outer wall of the tube will be forced into a fused, hermetic sealed engagement with the material forming the bored out wall portion of the silicon ring.

3,803,875

METHOD OF FORMING TITANIUM METAL-GLASS HERMETIC SEALS

Floyd A. Root, and Robert C. White, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 5, 1973, Ser. No. 329,708
Int. Cl. C03c *27/00, 27/04*
U.S. Cl. 65—43 **14 Claims**

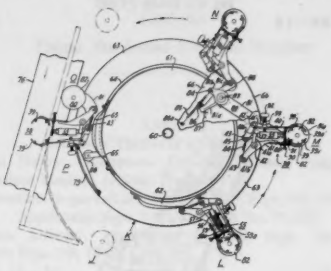
A hermetic seal is formed between a metal article, containing a major portion of titanium, and glass by forming a boron-oxide coating on the article, heating the article to a temperature in excess of the melting point of boron oxide to form a boron-containing film on the article and then contacting the article and glass and firing the unit.

3,803,876

GLASSWARE DIMPLING

James C. McReynolds, and William E. Adams, both of Sapulpa, Okla., assignors to Bartlett-Collins Company, Sapulpa, Okla.

Division of Ser. No. 80,992, Oct. 15, 1970, Pat. No. 3,705,026. This application Sept. 28, 1972, Ser. No. 292,906
Int. Cl. C03b *9/46, 7/00*
U.S. Cl. 65—70 **15 Claims**



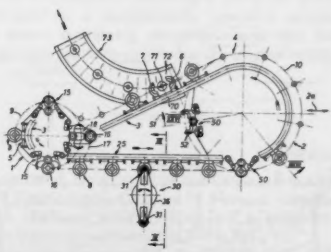
Tumblers and the like articles are produced from vitreous, plastic and similar materials by a continuous step by step production method, wherein each article may be first preliminarily formed as a parison and then blow-formed as a blank or semi-finished article. While the blank is still hot or semi-plastic, dimples or depressions are formed in its side and bottom walls to produce an indented or dimpled type of shape. Side wall dimpling is accomplished by providing transfer finger pairs with pressure nubbins and preliminarily employing the fingers as clamping pressers; a bottom end dimple is produced by providing a bottom closure plate of a vacuum head assembly with a centrally disposed nubbin and applying suction force to draw the article up into the head.

3,803,877

PRESS AND BLOW MACHINE FOR THE PRODUCTION OF CONTAINERS

Kurt Becker, Obernkirchen, Germany, assignor to Hermann Heye, Obernkirchen, Germany

Division of Ser. No. 716,196, March 26, 1968, Pat. No. 3,622,305. This application Nov. 9, 1971, Ser. No. 197,075
Claims priority, application Germany, Apr. 1, 1967, 62338
Int. Cl. C03b *9/00, 11/05*
U.S. Cl. 65—241 **11 Claims**



A press-and-blow container making machine wherein one of two rotary tables supports a set of blank molds receiving gobs from a gob feed and the other rotary table supports a set of blow molds serving to convert parisons obtained from the blank molds into finished containers. An endless flexible conveyor carries neck rings which transport parisons from the first table, past a preliminary treating unit and on to the blow

molds. The preliminary unit partially blows the parisons while supporting them from below by way of tables. The neck rings also transport finished containers away from the blow molds.

3,803,878

YARN CUTTER FOR CIRCULAR KNITTING MACHINES

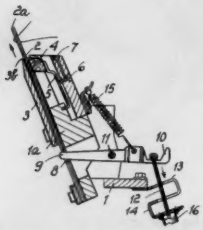
Francesco Lonati, via S. Polo 11, Brescia, Italy

Filed Mar. 20, 1972, Ser. No. 235,902

Claims priority, application Italy, Apr. 8, 1971, 22894/71

Int. Cl. D04b *15/60*

U.S. Cl. 66—14 **1 Claim**



A yarn cutter for circular knitting machines, particularly for yarn changers of double cylinder knitting machines, comprising at least one scissor member consisting of a striplike element mounted to slide backwards and forwards adjacent to a fixed blade. Pressed against the striplike element on the side opposite that adjacent the fixed blade, is a body of elastically yieldable material such as plastic material. This body occupies at least part of the width of the striplike element for the retention therebetween of the yarn or yarns after the cutting thereof. Means are also provided for adjusting the pressure of the elastic body on the striplike element.

3,803,879

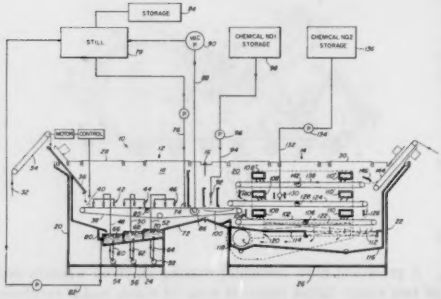
APPARATUS FOR TREATING FABRIC

William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.

Filed Dec. 13, 1971, Ser. No. 207,430

Int. Cl. B05c *9/06, 9/14*

U.S. Cl. 68—3 SS **4 Claims**



A method and associated apparatus of modular construction is provided for treating a running fabric web with various chemicals, such as scouring elements, and then drying the web by the use of super-heated solvent vapor and air as the drying agent in a closed system. A multi-stage solvent treatment station is provided wherein each stage continuously re-cycles a portion of the solvent to provide maximum solvent flow and cleaning action with a minimum amount of solvent. Additional chemical application stations are provided for applying selected chemicals to the fabric at different stages in the treatment process.

3,803,880

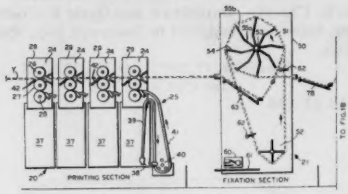
APPARATUS FOR APPLYING DYE TO YARN

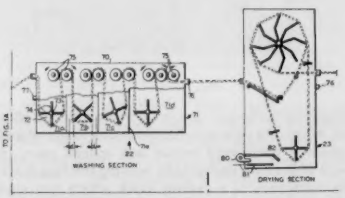
Robert Laing, and Evelyne Laing, both of 42 Wheelock Rd., Millbury, Mass.

Filed June 19, 1972, Ser. No. 264,063

Int. Cl. B05c *1/08*; D06c *1/00*; B05c *9/14*

U.S. Cl. 68—5 D **18 Claims**





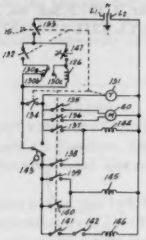
Apparatus and method for applying dye to yarn. Yarn to which the dye is to be applied between a plurality of pairs of what may be called printing rollers to which dye is being supplied by respective supply rollers running in contact with one of the printing rollers in each pair. The printing rollers are patterned, i.e., they have portions which will apply dye to the yarn when the yarn is pinched between the rollers of a pair, and they have portions which will not apply dye, since they do not pinch the yarn. By supplying different colored dyes to the respective pairs of rollers, multicolored yarn can be produced. The yarn is treated in a special fixing means to fix the dye, and then is washed and dried in special washing and drying means. The fixing and drying means feed the yarn in a coiled path along a reel like means within a steam or dry air heated chamber in such a fashion that the shrinkage of the yarn is taken into account while the washing means feeds the yarn through washing baths over agitating reels which agitate the yarn transversely of its path through the baths.

3,803,881

COMBINED UNBALANCE AND END OF CYCLE SIGNAL FOR AUTOMATIC WASHERS

Edward H. Getz, Saint Joseph, and Roque Marcade, Stevensville, both of Mich., assignors to Whirlpool Corporation, Boston Harbor, Mich.

Filed Nov. 17, 1972, Ser. No. 307,645
Int. Cl. D06f *23/04, 33/02, 37/24*
U.S. Cl. 68—12 R 4 Claims



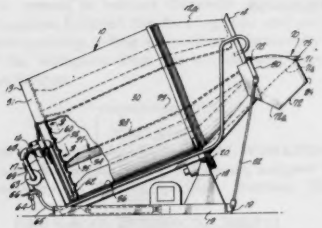
The coil of an unbalance or "kickout" switch is employed in a first mode of operation to produce an audible alarm indicating unbalance in the basket of an automatic washing machine and in a second mode of operation to produce a timed audible alarm indicating completion of the washing program.

3,803,882

APPARATUS FOR PROCESSING POROUS AND ABSORBENT SHEET MATERIAL IN BULK

George A. Brennan, Fullerton, Calif., assignor to Challenge-Cook Bros., Incorporated, Industry, Calif.

Continuation-in-part of Ser. No. 64,989, Aug. 19, 1970, Pat. No. 3,665,735. This application Aug. 17, 1971, Ser. No. 172,519
Int. Cl. D06f *39/08*
U.S. Cl. 68—208 1 Claim



A drum apparatus for maintaining a liquid bath in which sheet material of a porous and absorbent nature is processed includes a processing chamber adjacent an open end and a drainage chamber adjacent its other end which is closed. The drum is mounted for rotational movement about its longitudinal axis and for pivotal movement in a vertical plane. The drum is pivoted to a loading position and the sheet material is fed through the open end into the processing chamber. Fins in the processing chamber are adapted to work the sheet material in a liquid bath supplied to the drum during rotation of the drum in either direction. After the sheet material is processed the drum is pivoted to a discharge position for removal of the sheet material out through the open end.

3,803,883

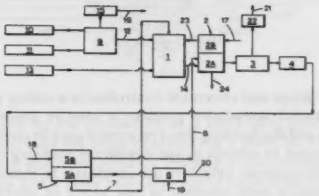
Patent Not Issued For This Number

3,803,884

PRODUCTION OF FERTILIZERS

William Henry Thompson, Dublin, Ireland, assignors to Fitzwilton Limited, Dublin, Ireland

Continuation-in-part of Ser. No. 859,435, Sept. 19, 1969. This application Sept. 11, 1970, Ser. No. 71,291
Claims priority, application Ireland, Sept. 16, 1969, 1298/69; Sept. 19, 1969, 1298/69
U.S. Cl. 71—34 22 Claims



The invention relates to the production of fertilizers, in particular potassium dihydrogen phosphate. This is obtained through acid attack on phosphate rock by a medium obtained by the reaction of sulphuric acid with potassium chloride. In particular, the phosphate rock is reacted with a medium comprising potassium bisulphate, sulphuric acid and phosphoric acid. As a result, the solid calcium sulphate formed in the reaction mixture can be readily filtered off from the mother liquor and the potassium dihydrogen phosphate product can be recovered in a commercially operative process. The mother liquor containing phosphoric acid and potassium dihydrogen phosphate is recycled to the original reaction mixture.

3,803,885

CONTROL OF ALGAE IN INDUSTRIAL WATER

Arnold Lada, Montclair; Alfonso N. Petrocci, Glen Rock, and John J. Merianos, Jersey City, all of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 861,172, Sept. 25, 1969, abandoned. This application Sept. 14, 1971, Ser. No. 180,499
Int. Cl. A01n *9/24*
U.S. Cl. 71—67 3 Claims

Slimicidal treatment of water in recirculated water systems such as in cooling towers, air-conditioners, humidifiers and the like. The treatment consists of the introduction into the water of an α-halo, α, β-unsaturated carbonyl compound, particularly of α-halocinnamaldehyde.

3,803,886

SYSTEM AND METHOD FOR CONTROLLING GAUGE AND CROWN IN A PLATE ROLLING MILL

John D. Sterrett, Williamsville, and Alfred J. Baeslack, East Aurora, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1972, Ser. No. 251,963
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 **12 Claims**

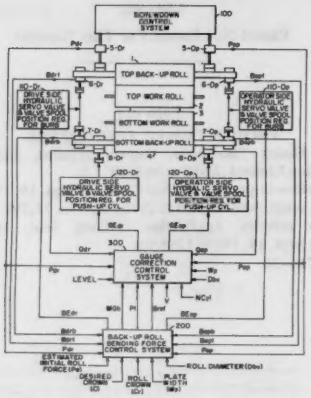

SCREWDOWN (CONTROL) SYSTEM
TOP BACK-UP ROLL
TOP WORK ROLL
BOTTOM WORK ROLL
BOTTOM BACK-UP ROLL
DRIVE SIDE HYDRAULIC SERVO VALVE & VALVE SPOOL POSITION REQ. FOR PUSH-UP CYL.
OPERATOR SIDE HYDRAULIC SERVO VALVE & VALVE SPOOL POSITION REQ. FOR PUSH-UP CYL.
GAUGE CORRECTION CONTROL SYSTEM
LEVEL
BACK-UP ROLL BENDING FORCE CONTROL SYSTEM
ROLL DIAMETER (Dbu)
ESTIMATED VIRTUAL ROLL FORCE (Pv)
DESIRED CROWN (C)
ROLL CROWN (Cr)
PLATE WIDTH (W)

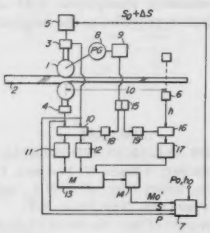
Plate gauge and crown are controlled in a rolling mill where conventional screwdown position is used to establish initial roll gap and the bending force reference used to control crown is employed to correct gauge deviations resulting therefrom. Hydraulic push-up cylinders are employed to maintain a roll gap which is held constant in one mode of operation with changes due to mill stretch and which is controllably varied in a second mode to provide proper output gauge.

3,803,887

CONTROL DEVICE FOR ROLLING MILLS

Hidehiro Kitanosono, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 832,952, June 13, 1969, abandoned. This application Mar. 2, 1972, Ser. No. 231,147
Int. Cl. B21b *37/00*
U.S. Cl. 72—11 **13 Claims**



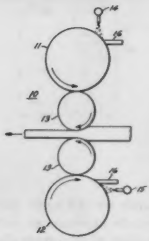
A control device for rolling mills adapted to control the roll gap opening S to obtain a required thickness h of a rolled material according to a relation $S = h - P/M$, wherein P is the rolling pressure and M is the spring constant of the roller stand, characterized in that the value of M is intermittently computed and renewed in a rolling process according to the results of intermittent measurements of a set of values of the roll gap, thickness of the rolled material and rolling pressure relating to each determined portion of the rolled material.

3,803,888

METHOD OF REDUCING ROLLING MILL ROLL WEAR

Richard S. Hostetter, and Mahesh M. Vyas, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 7, 1973, Ser. No. 338,711
Int. Cl. B21b *45/02, 27/10*
U.S. Cl. 72—45 **11 Claims**



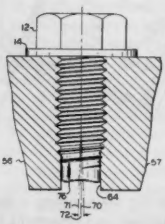
A method of reducing the wear in the work rolls of a mill stand for rolling a workpiece which comprises applying a lubricant onto the surface of the rolls in carefully controlled quantities during the rolling process.

3,803,889

SELF-THREAD FORMING THREADED FASTENERS AND METHOD FOR MAKING SAME

Herman G. Muenchinger, South Dartmouth, Mass., assignor to Research Engineering and Manufacturing, Inc., New Bedford, Mass.

Continuation-in-part of Ser. No. 3,985, Jan. 19, 1970, Pat. No. 3,681,963. This application May 17, 1972, Ser. No. 253,974
Int. Cl. B21h *3/06;* **B23g** *7/00*
U.S. Cl. 72—88 **6 Claims**



A self-thread forming threaded fastener has a straight thread on a shank of circular cross section and a tapered

thread on a work-entering end. The tapered portion of the thread is of lobular root, pitch and crest surface cross sections and which lobular configuration is continued, but to a diminishing extent, on the first few threads on the shank immediately adjacent to the tapered section. The fastener is formed by rolling between thread-rolling dies a blank having a cylindrical shank of circular cross section and an end section of arcuate lobular cross section including a tapered portion. The cylindrical shank may include a reduced diameter section adjacent to the end section. At least the lobular and tapered portions of the blank are intermittently deflected first in one direction and then in the opposite direction by the dies. Due to such deflections of the end of the blank, a lobular tapered thread is produced on the tapered portion of the blank. The reduced diameter section prevents the thread crest formed therein from being radially outwardly of the crest of the round thread on the shank.

3,803,890

ROLLING MACHINES

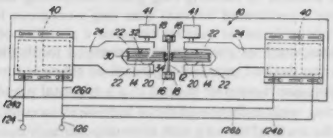
Gordon Sydney Connell, Cheltenham, England, assignor to National Research Developement Corporation, London, England

Continuation-in-part of Ser. No. 102,380, Dec. 29, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,799

Claims priority, application Great Britain, Dec. 31, 1969, 63607/69; Feb. 22, 1971, 5132/71

Int. Cl. B21h *1/12*

U.S. Cl. 72—107 **16 Claims**



This invention relates to improvements in rolling machines and methods of forming initially cylindrical workpieces to shape. The workpiece is initially located along its axis relative a pair of forming members and then rolled to shape, at least one of which has a profile to be squeezed into the workpiece. The forming member or members having the profile have radially outwardly diverging flanges at their edges to control the shape of the edges of the cylindrical workpiece and determine width-wise spread. Where the workpiece is rotatably fitted over a mandrel and at least two forming members are spaced evenly around the workpiece, a number of rotatably supported growth control rolls are spaced around the workpiece, arranged to remain in contact therewith during rolling in peripheral regions between the forming rolls and prevented from retracting during rolling so avoiding substantially deformation of the workpiece from the circular and preventing undue metal fatique.

3,803,891

METHOD FOR ROLLING HOT METAL WORKPIECES

William Smith, Burlington, Ontario, Canada, assignor to The Steel Company of Canada Limited, Toronto, Ontario, Canada

Filed Nov. 13, 1972, Ser. No. 306,013

Claims priority, application Great Britain, Nov. 15, 1971, 52995/71

Int. Cl. B21b *1/32*

U.S. Cl. 72—231 **11 Claims**

The rolling of hot metal workpieces in a rolling mill including a reversing roughing mill stand, a finishing mill and a coiler located between the former two components is accomplished by rolling the workpiece in the roughing mill, on the third from last pass when the workpiece is between the roughing mill and the coiler rolling the workpiece to a length less than the spacing between the roughing mill and the coiler, on the last pass rolling the workpiece to a length greater than this

spacing, coiling the workpiece in the coiler, uncoiling the workpiece from the coiler, delivering the workpiece to the finishing mill and rolling it in the finishing mill.

3,803,892

METHOD OF PRODUCING SPARK PLUG CENTER ELECTRODE

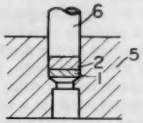
Terumoto Yamaguchi, Anjo, and Kanemichi Izumi, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariyashi, Aichi-ken, Japan

Filed Aug. 1, 1972, Ser. No. 277,101

Claims priority, application Japan, Apr. 18, 1972, 47-39350

Int. Cl. B21c *23/22*

U.S. Cl. 72—258 **2 Claims**



A method for the production of a spark plug center electrode comprising the steps of preparing a plate for extrusion from a clad plate produced by bonding a corrosion-resistant metal plate and a good heat conducting metal plate together, and cold-extruding the plate for extrusion to a rod form.

3,803,893

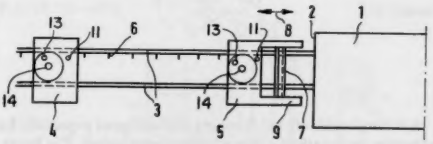
PROCESS FOR MULTIPLE BENDING OF RODS AND A BENDING MACHINE FOR CARRYING OUT THIS PROCESS

Paul Carl Peddinghaus, 5820 Gevelsberg, and Carl Ulrich Peddinghaus, Obere Lichtenplatzer Strasse 276, 5600 Wuppertal-Barmen, both of Germany

Filed Aug. 17, 1971, Ser. No. 172,540

Int. Cl. B21d *11/04*

U.S. Cl. 72—306 **19 Claims**



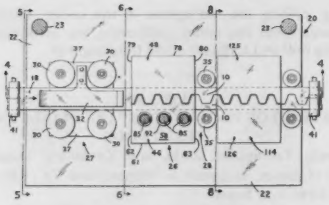
The multiple bending of rods or other elongated elements into loops in which a rod (or rods) is supported on an abutment and is bent by means of a bending tool which is guided on a circular path around a bolt which determines the bending radius. The rod (or rods) which is to be bent is held by a clamping element which is fixed in relation to the rod (or rods) at least before the individual bends whereby before each individual bend a straight line distance between the bending tool of the bending machine and the clamping element is reduced, by means of a drive, by the length of the loop side piece required for the next single bend.

3,803,894

METHOD OF AND APPARATUS FOR MANUFACTURING A PLURALITY OF CONTINUOUS SERRATED METAL STRIPS FROM A SINGLE STRIP OF FEED STOCK

Leopold Bustin, P.O. Box 589, Flanders, N.J.

Filed July 21, 1972, Ser. No. 273,725
Int. Cl. B21d 43/28
U.S. Cl. 72—324 14 Claims



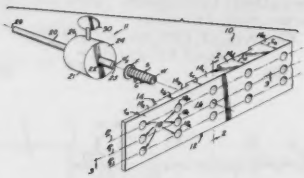
Method of and apparatus for manufacturing a plurality of continuous serrated metal strips from a single strip of feed stock includes means for advancing the single strip of feed stock into a shear means. Exertion of a cutting force by a ram acting upon dies of the shear means causes shearing of the feed stock to form a plurality of serrated metal strips. Strip positioning means disposed on the discharge side of the shear means cooperating with hold-down means and frictional forces generated between the cut strips and the dies preclude deformation of the metal strips in a coil-like manner as has been heretofore known. Any kinks formed in the apparatus during shearing may be removed by a kink-removal device.

3,803,895

TUBING BREAK-OFF AND FINISHING TOOL

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga.

Continuation-in-part of Ser. No. 882,126, Dec. 4, 1969, Pat. No. 3,679,109, which is a continuation-in-part of Ser. No. 711,368, March 7, 1968. This application July 24, 1972, Ser. No. 274,613
Int. Cl. B21k 27/06
U.S. Cl. 72—324 9 Claims



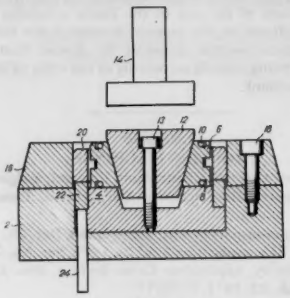
A tubing break-off and finishing tool designed expecially for adjusting the length of a thin walled tubular sleeve. The break-off tool includes a first internal support for internally supporting the sleeve on one side of the plane along which it is to be severed, a first external support for externally supporting the sleeve on the same side of the severance plane as the first internal support, a second internal support for internally supporting the sleeve opposite the first internal support, and a second external support for externally supporting the sleeve opposite the first external support. The supports may be mounted in plier-type carriers to pivot the supports with respect to each other, and piercing members or shearing members may be provided to sever the sleeve along the severance plane. The finishing tool provides a taper in the end of the sleeve and smooth out any burrs on the end of the sleeve.

3,803,896

METHOD AND APPARATUS FOR FORMING LOCKING SURFACES ON GEAR RINGS

Milan Cermak; Vlastimil Fin, and Frantisek Nepodal, all of Prague, Czechoslovakia, assignors to Praga, automobilove zavody, narodni podnik, Prague, Czechoslovakia

Filed May 19, 1972, Ser. No. 254,892
Int. Cl. B21k 1/30
U.S. Cl. 72—355 3 Claims



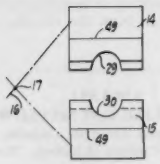
The method of forming ring gears comprising the steps of locating a preformed internal gear ring workpiece between a fixed circumferential bearing ring and a plurality of movable segments, each of the segments having a tooth die face on which the desired interlocking bevel or shape is formed. The segments are thereafter shifted in a horizontal plane, into the gear ring with a degree of force sufficient to cold press and form the teeth of the ring with a correspondingly desired interlocking surfaces.

3,803,897

COMPRESSION STAKING APPARATUS

Ralph G. Ridenour, and Walter Chandler Stevens, Jr., both of Mansfield, Ohio, assignors to Universal Refrigeration, Inc., Mansfield, Ohio

Division of Ser. No. 123,255, March 11, 1971, Pat. No. 2,744,122. This application May 4, 1972, Ser. No. 250,255
Int. Cl. B21d 37/10
U.S. Cl. 72—412 15 Claims



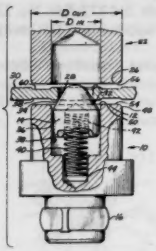
A pair of mating dies is disclosed to establish a compression staked surface on the outer malleable wall of inner and outer telescoped tubular parts with the compression staked surface having a radially compressed area and a toothed area and establishing a zig-zag seal path between the inner and outer tubular parts which is fluid pressure tight and also resists longitudinal and torsional force between the parts.

3,803,898

RING PAD STRESS COINING TOOLING

Eugene R. Speakman, Fullerton, Calif., assignor to McDonell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 2, 1972, Ser. No. 277,358
Int. Cl. B21d *37/10*
U.S. Cl. 72—416 7 Claims



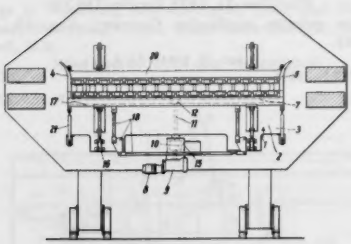
Tools to plastically deform a portion of a structural member into one or a pair of flat bottomed grooves to generate residual compressive stresses in the member adjacent a discontinuity therein which improve the fatigue strength of the structural member.

3,803,899

CENTERING DEVICE FOR PLATE ROLLING AND LENGTHENING MILLS

Albert Hertl, Ankerstrasse 1, and Werner Iwersen, Blumenthalstrasse 42, both of 41 Duisburg, Germany

Filed May 27, 1971, Ser. No. 147,531
Claims priority, application Germany, May 30, 1970, 2026521
Int. Cl. B21d *43/00*
U.S. Cl. 72—420 4 Claims



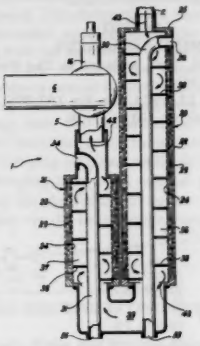
The centering device includes a housing and a pair of work centering jaws mounted on respective slide plates movable in the housing by respective racks engaged with a rotatable pinion. The pinion is secured to a vertically oriented shaft connected through a slip-clutch to worm gearing driven by an electric motor. The entire arrangement is shiftable laterally, through one-half the width of the clamping jaw, by a hydraulic actuator. A lower roller support is connected by a linkage to an upper roller support for conjoint movement of the two roller supports in respective opposite directions, and an equalizing linkage assures uniform motion during the height centering operation.

3,803,900

LEAK DETECTION DEVICES

Pierre Maillard, Donges, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed June 14, 1972, Ser. No. 262,613
Claims priority, application France, June 14, 1971, 7121515
Int. Cl. G01m *3/20*
U.S. Cl. 73—23 5 Claims



In a device for detecting leakage through the walls of an enclosure by means of a tracer gas such as helium, the gas fractions which pass through the enclosure wall are drawn into a detection circuit which comprises an adsorption element and an ionic pump placed in series.

The adsorption element comprises at least one cylindrical tube containing an adsorbing substance which is maintained against the internal tube surface by means of a grid or perforated jacket, and an axial duct through which passes a liquefied cooling fluid.

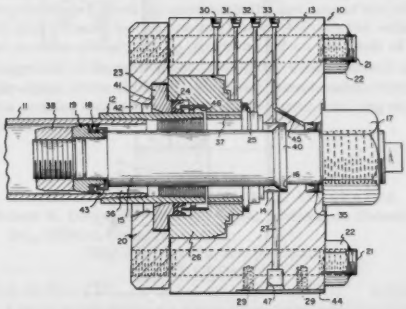
The sampling gas flows through the annular space formed between the tube and the axial duct and deflectors mounted in the space form a series of baffles on the flow path of said gas for effective trapping of its constituents with the exception of the helium which alone reaches the ionic pump.

3,803,901

PIPE TESTER

William M. McConnell, Pittsburgh; William H. Bradley, Ben Avon; Howard E. Chappell, Butler, and Raymond L. Carey, Pittsburgh, all of Pa., assignors to Taylor-Wilson Manufacturing Company, McKees Rocks, Pa.

Filed Oct. 10, 1972, Ser. No. 296,286
Int. Cl. G01m *3/28*
U.S. Cl. 73—49.8 16 Claims



The pipe tester head is adapted to seal on the interior surface of a pipe slightly inward of the pipe coupling and on the

exterior surface of the pipe coupling. The main housing includes a central chamber partly defined by the annular seal which engages the pipe coupling. An elongated rod extends through the central chamber and out of the main housing and has the annular seal which engages the pipe interior positioned thereabout. The pipe to be tested slides over the pipe seal and into the central chamber. The pipe tester head includes a plurality of purge lines, a test fluid inlet and an interchangeable inner assembly to accommodate different size pipe.

3,803,902

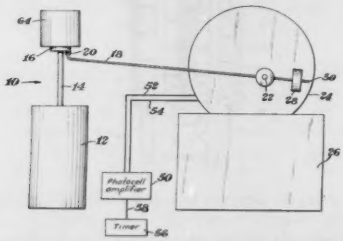
TIMING APPARATUS

Earl E. Rusk, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 12, 1971, Ser. No. 187,995

Int. Cl. G01n *11/06*

U.S. Cl. 73—56 **5 Claims**



This invention comprises apparatus for measuring the rate of extrusion of an olefin plastic or material having similar extrusion characteristics through an orifice of specified length and diameter under prescribed conditions of temperature and pressure. A follower arm sensing motion of a piston rotates an apertured disc between a light source and photocell coupled to a timer device. The timer is actuated during the time the aperture permits light to pass between the source and photocell. Aperture movement is a function of the movement of a piston in a standardized test setup.

3,803,903

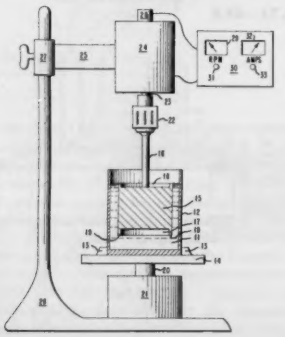
APPARATUS AND METHOD FOR MEASURING THE RHEOLOGICAL PROPERTIES OF A FLUID

Otto C. C. Lin, Cherry Hill, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 23, 1972, Ser. No. 237,392

Int. Cl. G01n *11/14*

U.S. Cl. 73—59 **14 Claims**



Disclosed herein is an apparatus of the coaxial cylinder type, and a method for rapidly and accurately measuring the rheological properties of a fluid, particularly the shear dependent viscosity, thixotropy and yield stress of a non-Newtonian fluid.

3,803,904

APPARATUS FOR TESTING BALL BEARINGS

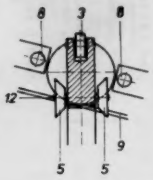
Rudolf Diem, Dittelbrunn, and Horst Meurer, Schweinfurt, both of Germany, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Feb. 2, 1972, Ser. No. 222,966

Claims priority, application Germany, Feb. 13, 1971, 2106891

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 R **9 Claims**



A ball is movably supported on a mechanism comprising a shaft rotatable about its central axis. A carrier is mounted at the end of the shaft. On the carrier a pair of spaced drive wheels journaled about a common axis and a third supporting element is mounted. The drive wheels and the supporting element are arrayed in a triangular pattern to support the ball adjacent the testing head.

3,803,905

DEVICE FOR MACHINING AN ACCURATELY DIMENSIONED ANNULAR GROOVE AROUND A CIRCULAR MEASURING AREA FOR MEASURING INTRINSIC STRESSES IN STRUCTURAL COMPONENTS OF MACHINES AND APPARATUS

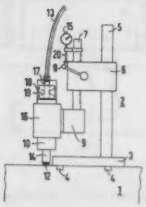
Helmut Wolf, Uhlenbroicher Weg 66, Duisburg-Grossenbaum; Wolfgang Bohm, Brucker Holt 32, Essen-Bredeney, and Erwin Stucker, Neue Heimat 16, Essen-Frintrop, all of Germany

Filed Mar. 21, 1972, Ser. No. 236,721

Claims priority, application Germany, Aug. 25, 1971, 2142463

Int. Cl. G01b *7/18*

U.S. Cl. 73—88 R **7 Claims**



There is included in apparatus for checking a structural component for intrinsic stresses by attaching strain gage means to a surface measuring area of the component, cutting an annular groove into the component around the area, measuring through terminal leads extending from the strain gage means the change in electrical response of the strain gage means, due to the cutting of successive layers of material out of the groove, as indicative of the intrinsic stress existing prior

thereto, and measuring the depth of the layer of removed material or the corresponding depth of the groove after each incremental cut, a crown boring tool for machining the annular groove around the measuring area, the tool having a shaft hollow throughout and being mounted in a hollow boring spindle whereby the terminal leads of the strain gage means attached to the measuring area are extensible through the tool and the hollow spindle.

3,803,906

APPARATUS FOR CONTROLLING DYNAMIC TESTING EQUIPMENT

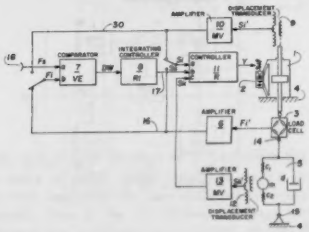
Rolf Ross, Darmstadt, Germany, assignor to Firma Carl Schenck Machinenfabrik GmbH, Darmstadt, Germany

Filed Feb. 23, 1973, Ser. No. 335,078

Claims priority, application Germany, Apr. 12, 1972, 2217536

Int. Cl. G01n *3/32*

U.S. Cl. 73—90 **7 Claims**



A control system for load testing a sample in a dynamic testing device by means of a servo-hydraulic system includes an outer control circuit which controls the hydraulic system as a function of the load. Resonant oscillation effects are compensated by an inner control circuit which controls the system as a function of the movement of a hydraulic piston. The movement of the mass of the sample may also be employed as a control function.

3,803,907

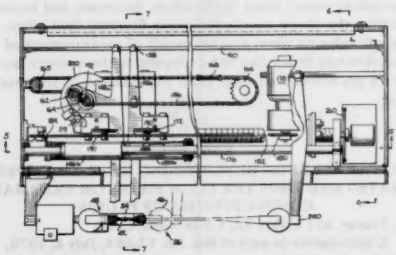
TENSILE TESTING APPARATUS

George E. Ryckman, East Liverpool, Ohio, and Walter J. Budd, Waterbury, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,265

Int. Cl. G01n *3/08*

U.S. Cl. 73—95 **22 Claims**



A tensile testing apparatus includes an intermittently driven conveyor containing cradles of predetermined configuration shaped to receive a sample to be tested and to orient the sample transversely to the conveyor feed direction. The conveyor includes a straight line portion for arranging the samples in order before the testing apparatus with their identity tags visible. The sample is passed through apparatus for applying two bench mark stripes in predetermined spaced orientation and subsequently into a position for alignment with the probe of a thickness gauge and thereafter into alignment with a pair of clamping jaws of a tensile stressing device which engage opposite ends of the sample in directions transverse to the conveyor feeding direction. The bench mark stripers apply a side-by-side contrasting (white and black stripes) in an arrangement for photoscanning irrespective of the color of the material being tested. The clamping jaw mechanism includes means for the controlled outward movement of one of the clamping jaws along with the movement of two photoscanners which are oriented to track the respective bench marks. The stress and strain conditions sensed by the photoscanners and the movable jaws are transmitted to recording means such as a computer along with the measurement of the thickness. The mechanism includes means for removing the tested material from the clamping jaws such as by an air blast and for returning the clamping jaws to an original position along with the resetting of the photoscanners to put the parts in a condition for operation on the next sample moved forward by the conveyors.

3,803,908

MATERIAL DISCRIMINATING DEVICE FOR METALLIC PLATES

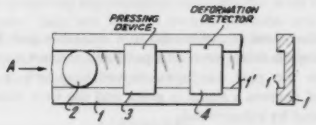
Takashi Endo, Kobe, and Riichiro Yamashita, Kakogawa, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1972, Ser. No. 228,994

Claims priority, application Japan, Mar. 27, 1971, 46-17747; Mar. 27, 1971, 46-17751; Mar. 27, 1971, 46-21439

Int. Cl. G01n *3/20*

U.S. Cl. 73—100 **7 Claims**



A material discriminating device for metallic plates comprises a base member having a passage with dimensions fitting the configuration of metallic plates whose material is to be discriminated, pressing means disposed along the passage for applying a predetermined load to the metallic plates, and deformation detecting means disposed along the passage for detecting the magnitude of the permanent deformation of the metallic plates caused by the pressing means, whereby the material of metallic plates may be discriminated on the basis of the magnitude of the permanent deformation which depends upon the elastic limits of the metallic plates. Novel constructions of the pressing means as well as the deformation detecting means are also provided.

3,803,909

VEHICLE AND ENGINE TESTING APPARATUS

Robert F. Ostrander, Orange, Conn., assignor to Ostradyne, Inc., Milford, Conn.

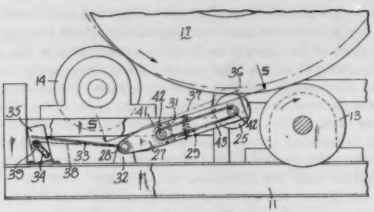
Filed Dec. 7, 1972, Ser. No. 313,121

Int. Cl. G01m *17/00*

U.S. Cl. 73—117 **6 Claims**

Lifting or climbing of a wheel when under test in a vehicle and engine dynamometer apparatus is prevented by the combination of a roll arranged with its axis generally parallel to the

axes of paired rolls which support the wheel being tested, wherein the roll lifts when the wheel lifts from the paired rolls,



and a switch connected to the dynamometer which de-energizes the dynamometer in response to lifting movement of the roll.

3,803,910

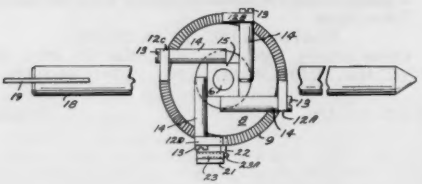
WIND TURBULENCE METERING

George Crompton, 710 Armada Rd., South, Venice, Fla.

Filed Nov. 6, 1972, Ser. No. 303,813

Int. Cl. G01w 1/00

U.S. Cl. 73—188 **2 Claims**



A weather vane is connected to a rotatable part by a one way in azimuth drive, such as a pawl and ratchet mechanism, and when the part has been moved angularly a specific number of degrees a signal is given and the time interval can be measured by a stop watch.

3,803,911

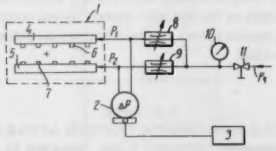
DEVICE FOR MEASURING THE RATE OF FLOW OF DUST-LADEN GASES

Evgeny Filippovich Shkatov, prospekt Vernadskogo, 99, korpus 1, kv. 139, Moscow; Jury Petrovich Zhukov, Moskovsky prospekt, 82, kv. 56, and Alvin Germanovich Kozlov, ul. Sovetskaya, 4, kv. 15, both of Yaroslavl, all of U.S.S.R.

Filed Sept. 18, 1972, Ser. No. 290,147

Int. Cl. G01s 1/00

U.S. Cl. 73—194 R **3 Claims**



A device for measuring the rate of flow of dust-laden gases in which the primary transducer comprises two hollow tubes. The tubes are provided with holes in their external surfaces intended to feed compressed air or an inert gas into the measured dust-laden gas flow. The holes in one tube are arranged co-axially with the holes in the other tube and are directed opposite to each other so that the flow of compressed air or inert gas from the holes of both tubes takes place in a direction at right angles to the direction of the measured dust-laden gas flow.

3,803,912

FLOW QUANTITY MEASURING SYSTEM

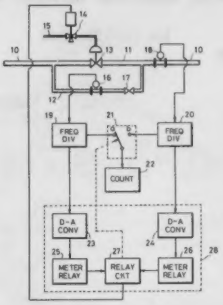
Masaaki Ohno, Tokyo, Japan, assignor to Tokico Ltd., Kawasaki-City, Kanagawa-ken, Japan

Filed Sept. 28, 1972, Ser. No. 293,043

Claims priority, application Japan, Sept. 28, 1971, 46-75673

Int. Cl. G01f 7/00

U.S. Cl. 73—195 **8 Claims**



A flow quantity measuring system comprises: a small-flowrate branch pipeline not provided with a shut-off valve; a large-flowrate branch pipeline provided with a shut-off valve; a small-flowrate flowmeter provided in the small-flowrate branch pipeline and having an upper flowrate limit value within which measurement can be carried out with a specific precision; a large flowrate flowmeter provided in the large-flowrate branch pipeline and having a lower flowrate limit value within which measurement can be carried out with a specific precision; changeover switching means for selectively switching and supplying the results of measurement of the flowmeters to a counter section for counting these results; and control means for controlling the changeover switching means and the opening and closing of the shut-off valve. The control means operates to switch the changeover switching means thereby to cause, when the flowrate of a liquid flowing through a liquid conduit pipeline increases and exceeds the above mentioned upper flowrate limit value, the shut-off valve to open, and, at the same time, the result of measurement of the large-flowrate flowmeter to be supplied to the counter section and to cause, when the flowrate decreases and becomes less than the above mentioned lower flowrate limit value, the shut-off valve to close and the result of measurement of the small-flowrate flowmeter to be supplied to the counter section after a predetermined time from this closure of the shut-off valve.

3,803,913

APPARATUS FOR DETERMINING HEAT-TRANSFER RATES AND THUS THE FLOW RATES OR THERMAL CONDUCTIVITIES OF FLUIDS

Jay Tracer, 451 Esther St., Costa Mesa, Calif.

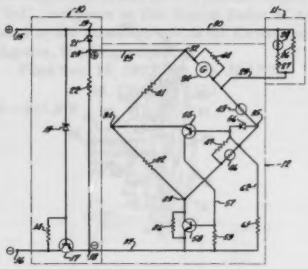
Continuation-in-part of Ser. No. 52,684, July 6, 1970, abandoned, which is a continuation of Ser. No. 712,709, March 13, 1968, abandoned. This application Jan. 4, 1971, Ser. No. 103,367

Int. Cl. G01f 1/00; G01p 5/00

U.S. Cl. 73—204 **30 Claims**

A thermistor bridge circuit and method in which a sensing thermistor generates a square wave having a varying duty cy-

cle, such wave providing an accurate indication of the rate of heat transfer from the sensing thermistor to the ambient region, such rate of heat transfer varying with factors including the flow rate of fluid in the ambient region and the thermal conductivity of such fluid. In the preferred embodiment, an external control circuit is provided to maintain the frequency constant, and effects turn-on of the bridge whereas the bridge turns itself off. The width of each pulse is modulated in response to both (*a*) heat transfer and (*b*) the temperature of the sensing thermistor. The amplitude of each pulse is modulated in response to only the temperature of the sensing



thermistor, and in such manner as to neutralize the effects of (*b*). The area of each pulse therefore varies only in accordance with heat transfer, and such area is indicated by a galvanometer. One of the two factors (voltage and current) representing power is maintained constant, so that the remaining one of the two factors will indicate the power which is supplied to the sensing thermistor in order to maintain it at a predetermined temperature differential above ambient. One embodiment incorporates a bridge which is self-oscillating, whereas the bridge in the above-indicated preferred embodiment is not self-oscillating since the control circuit is employed to turn on the bridge.

3,803,914

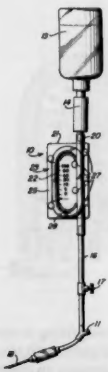
FLOW METER FOR PARENTERAL SOLUTIONS

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.

Filed June 9, 1972, Ser. No. 261,323

Int. Cl. G01f *1/00*; A61m *5/16*

U.S. Cl. 73—209 **15 Claims**



A flow meter for measuring and indicating the flow rate of a parenteral fluid intravenously fed into a body comprises a transparent plastic cylinder positioned in a transparent plastic tube so that no fluid is allowed to flow around the cylinder. The cylinder is hollowed out in its middle so as to define a measuring chamber having tapered sides, and a small weight is positioned in the measuring chamber. The parenteral fluid is made to flow from the bottom to the top of the meter, through the chamber, and the weight is lifted a distance corresponding to the flow rate of the fluid. A scale associates with the weight so that the flow rate of the fluid may be visually monitored.

3,803,915

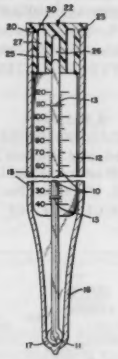
FOOD PREPARING THERMOMETERS

John L. Chaney, 156 Broad St., Lake Geneva, Wis.

Filed Aug. 21, 1972, Ser. No. 282,282

Int. Cl. G01k *1/14*

U.S. Cl. 73—376 **3 Claims**



A food preparing thermometer in which the scale card and thermometer tube are held in proper position and against movement relative to an outer protective tube by means of a plastic cap having a central inner portion releasably engaging the upper end of the thermometer tube.

3,803,916

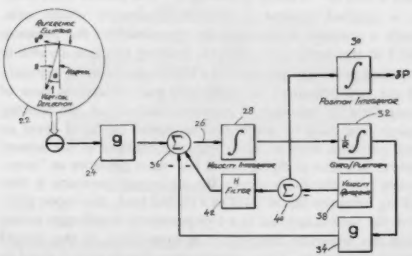
DIRECT MEASUREMENT OF EARTH'S VERTICAL DEFLECTION USING SHIP'S INERTIAL NAVIGATION SYSTEM

John J. Dematteo, Whitestone; Robert A. Leonards, Brooklyn, both of N.Y., and Anthony W. Butera, Sykesville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1973, Ser. No. 330,895

Int. Cl. G01v *7/16*

U.S. Cl. 73—382 **2 Claims**



A method for obtaining at a point the value of earth's vertical deflection, which is the angular difference between the

local or astronomic vertical at a point and the normal to the reference ellipsoid of the earth at that point. The position coordinates of the point is measured by using a ship's inertial navigation system (SINS) which is compared with corresponding the position coordinates of the same point measured by using a geodetic reference apparatus, such as a long-range electronic navigation system (LORAN) or high precision short-range navigation (HIRAN). The difference between the two values of the position coordinates of the point; also called dP_T total position error; is due to vertical deflection; i.e., the difference between local vertical and geodetic vertical or normal to the reference ellipsoid of the earth at that point; error due to gyro drift of the SINS; and reference velocity error. Contributions due to error because of gyro drift and to error in reference velocity are subtracted from dP_T, the value of the difference between the two values of position coordinates of the point, using SINS RESET technique and a standard reference velocity technique respectively so as to obtain dP_V, position error due to earth's vertical deflection. The value of dP_V is then mainly due to earth's vertical deflection at that point, from which the value of vertical deflection at that point is obtained using SINS INVERSE FILTER technique.

3,803,917

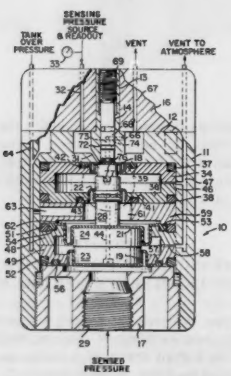
DIFFERENTIAL PRESSURE SENSOR

Dennis L. Reese, Kirkland, and William Jenkins, Seattle, both of Wash., assignors to Western Liquid Level, Inc.

Filed Jan. 15, 1973, Ser. No. 323,866

Int. Cl. G01l 7/08

U.S. Cl. 73—393 **9 Claims**



The differential pressure sensor utilizes a source of pneumatic pressure constituting a sensing pressure, which acts against a first or "sensing diaphragm." The sensed fluid pressure is applied against a second diaphragm which acts, through a pressure transducer, in opposition to the pressure applied to the sensing diaphragm, tending to close a valve in the sensing pressure line causing a build-up of sensing pressure until the two pressures are balanced and a constant flow of sensing fluid is restored. A remote read-out in the sensing pressure line may be calibrated in terms of lquid level or sensed pressure level so as to indicate changes in the sensed pressure. In order to compensate for vapor pressure or "over-pressure" in situations where the unknown pressure is that resulting from the liquid level in a closed tank, the vapor pressure in the tank is applied to a compensating diaphragm acting against the pressure transducer in opposition to the sensed pressure diaphragm. The compensating diaphragm is sized so as to compensate for the vapor pressure to which both the sensed pressure diaphragm and the sensing pressure diaphragm are subjected. A first screw adjustment means is provided to adjust the sensitivity of the restricting valve in the sensing pressure line and a second adjustment means is provided for regulating the effective diaphragm area exposed directly to the vapor pressure.

3,803,918

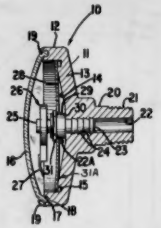
PRESSURE GAUGE ASSEMBLY

Jacob M. Blough, Jr., Quakertown, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,663

Int. Cl. G01l 7/04

U.S. Cl. 73—420 **12 Claims**



The pressure gauge of the Bourdon tube type, especially useful for fire extinguishers, has a tubular connection extending from a back plate closing one end of the casing. A socket has a barbed end snugly received within the bore of the connection and the other end projecting into the casing. A normally bowed dial plate disc is mounted on the socket and has its outer edge resting upon the edge of the inner face of the back plate when the socket is positioned in the bore of the connection. The socket is seated against the back plate so that the dial plate disc is substantially straight.

3,803,919

PUMPING DEVICE AND A LIQUID TAKE-OFF UNIT INCLUDING SAID DEVICE

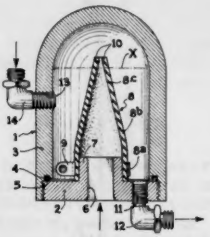
John Reginald Tansony, Etobicoke, Ontario, Canada, assignor to Markland Speciality Engineering Ltd., Mississauga, Ontario, Canada

Filed Nov. 30, 1972, Ser. No. 310,712

Claims priority, application Canada, Dec. 22, 1971, 7146094

Int. Cl. G01n 1/14

U.S. Cl. 73—421 B **10 Claims**



Liquid pumping device comprising a closed vessel having a liquid inlet orifice communicating with the interior of the vessel by way of a check valve having an outlet. An outlet orifice of the vessel is adapted to communicate with a receiving means. A control orifice provided in the vessel is adapted to be put alternately in communication with the pressure of a gas

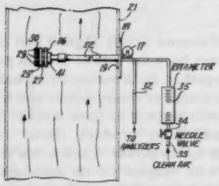
and with atmospheric pressure. The control orifice communicates with the interior of the vessel below the level of the liquid which is established therein in the course of the filling of the vessel by equilibrium between the hydrostatic pressure and the pressure of a gas pocket trapped in the vessel above the level of the liquid. The volume of the gas pocket is such that the outlet of the check valve is above said level of the liquid.

3,803,920

SAMPLE DILUTION DEVICE-DISC DILUTER

James B. Homolya, Cary, and Robert James Griffin, Durham, both of N.C., assignors to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

Filed Nov. 15, 1972, Ser. No. 306,977
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 R **9 Claims**



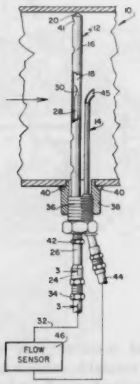
A device for obtaining a representative sample of a gaseous emission stream and diluting sample with clean air so that the resulting stream can be subsequently analyzed.

3,803,921

SAMPLING AND FLOW MEASURING DEVICE

Peter D. Dieterich, 2927 Summit Dr., Michigan City, Ind.

Continuation-in-part of Ser. No. 744,800, July 15, 1968, Pat. No. 3,581,565. This application Mar. 5, 1971, Ser. No. 121,288The portion of the term of this patent subsequent to June 1, 1988, has been disclaimed.
Int. Cl. G01n *1/20*
U.S. Cl. 73—422 R **6 Claims**



A device for sampling the fluid flow in a pipe and comprising a probe extending into the flow stream of said pipe. The probe comprises an outer conduit having blind inner and outer ends extending diametrically across the pipe and having a plurality of laterally spaced openings facing the flow and an inner conduit extending from exterior of the pipe to the axial center of the outer conduit from one end thereof and providing the sole communication from the interior of the outer conduit to sample gathering means external of the pipe. The lateral openings sample the stream of fluid at a plurality of areas across the diameter of the pipe, carrying the respective samples into the interior of the outer conduit which constitutes a mixing plenum so that a representative sample is drawn off from the inner conduit.

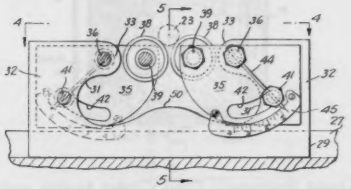
Instead of drawing the sample off, in the case of gases where the pipe for example constitutes a stack, the sample is passed through a flow sensor and thence returned to the pipe to measure the rate of flow of the fluid.

3,803,922

ADJUSTABLE BALL BEARING ASSEMBLY FOR DYNAMIC BALANCING MACHINES

Albert J. Trahan, 1717 Fifth St., Lake Charles, La.

Filed Dec. 1, 1972, Ser. No. 311,108
Int. Cl. G01m *1/04*
U.S. Cl. 73—471 **7 Claims**



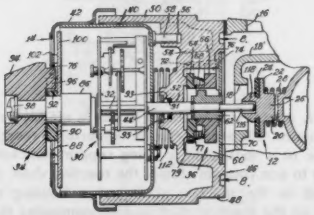
A shaft bearing assembly for dynamic balancing machines. The assembly has opposing pivoted arms provided with rollers at their top ends adapted to support a rotating shaft associated with the unit under test. The pivoted arms are provided with arcuate slots through which headed clamping screws extend to clamp the arms in adjusted positions. Respective stationary indicating pointers are provided, extending from the pivot connections of the arms through the clamping bolts, and associated movable arcuate scales are provided on the arms adjacent the ends of the pointers so as to provide indications of the adjusted positions of the arms and to enable these positions to be reproduced if necessary.

3,803,923

FUEL BURNER TIME CONTROL

Charles Emil Hajny, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed May 22, 1972, Ser. No. 255,415
Int. Cl. F16h *5/76*; **F16k** *31/48*
U.S. Cl. 74—3.5 **8 Claims**



A timer control apparatus for selectively opening a valve or the like uses a conventional spring-wound clock drive mechanism slidably mounted in a housing so that its drive shaft is axially shiftable between two positions. A timer setting means is provided for turning the drive shaft to a selected time

setting position and includes lost motion means to operatively engage the drive shaft only between minimum and maximum time setting positions. A time controlled lock means is provided for holding the drive shaft in either of the two axial positions and for freeing the drive shaft to be shifted to the other position upon rotation of the drive shaft to either the off position or maximum time setting position. A return spring urges the clock drive mechanism and associated drive shaft towards one of the two axial positions.

3,803,924

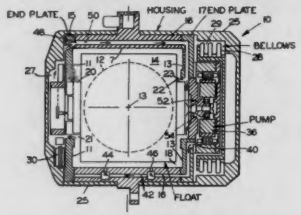
LIQUID HYDROSTATIC GYRO GIMBAL SUPPORT

Howard E. Schulien, Montville; William H. Ficken, Berkeley Heights, and Robert J. Sgambati, Secaucus, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Oct. 4, 1971, Ser. No. 188,687

Int. Cl. G01c *19/20*

U.S. Cl. 74—5 R **2 Claims**



A Liquid Hydrostatic Gyro Gimbal bearing system includes a pump for circulating a liquid, a bellows which allows for thermal expansion of the liquid and a sealed housing containing the gyro float and associated bearing geometry.

3,803,925

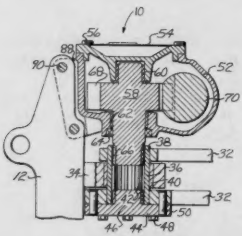
RACK AND PINION SWING ACTUATOR FOR A BACKHOE

James S. Jackson, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 14, 1972, Ser. No. 280,587

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.17 **5 Claims**



There is disclosed a backhoe having a readily removable swing actuator. The swing actuator comprises a reaction shaft receivable in a socket on a swing support bracket that is operative to non-rotatably retain the reaction shaft. A pinion is secured to the reaction shaft and a housing rotatably mounted on the reaction shaft and encompassing the pinion gear. A linear hydraulic motor is drivingly connected to the pinion gear and to the housing to operatively swing the housing around the reaction shaft. Means are provided for detachably coupling the housing to a pivotally mounted boom swing frame to transmit torque from the housing to the boom swing frame.

3,803,926

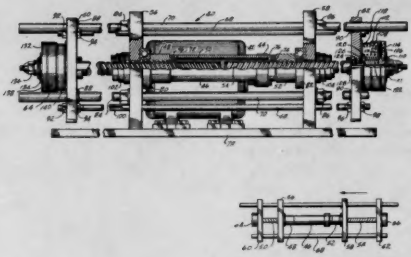
TURNBUCKLE DRIVE

Augustus P. Winter, 8373 Cliffridge Ln., La Jolla, Calif.

Filed July 24, 1972, Ser. No. 274,677

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **10 Claims**



A first and second axially aligned pair of recirculating ball nuts and screws have the screws of both pairs joined for axial movement together. Both recirculating ball nuts are driven in rotation by a source of rotary power and both nuts are axially constrained with respect to their screws. The screws are oppositely threaded to produce linear reciprocation from unidirectional rotary power. Each screw is braked to prevent its rotation with respect to its associated ball nut at the beginning of and throughout its power stroke, while the other screw is left free to rotate with its recirculating ball nut. At the end of a power stroke the brake is released to allow the first screw to rotate with its ball nut while at the same time the second screw is braked to initiate its power stroke.

3,803,927

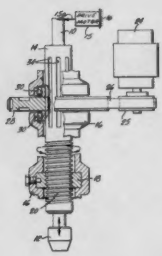
COAXIAL FORCE AND MOVEMENT MECHANISM FOR A MACHINE TOOL

Martin David Lawler, Harleysville, Pa., assignor to Bridgeport Machines, Inc., Bridgeport, Conn.

Filed July 10, 1972, Ser. No. 269,977

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **12 Claims**

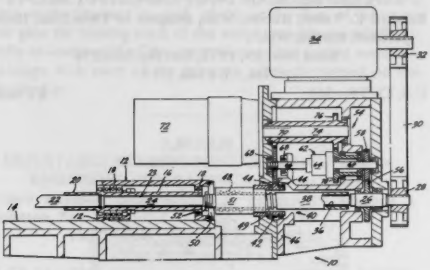


In a conventional machine tool wherein a spindle is mounted within and rotatable relative to a quill, which in turn is supported on a housing frame for relative axial movement, a nut is provided coaxially surrounding the quill and having helical threaded engagement therewith. Driving actuator means supported on the frame operates on the nut and quill combination to rotatably move one member of the combination relative to the other to produce linear axial movement of the quill and spindle relative to the frame.

3,803,928
SINGLE SPINDLE MECHANICAL FEED UNIT

John Konkal, Bloomfield Hills; James Egbert, Union Lake, and Robert W. Richards, Sterling Heights, all of Mich., assignors to LaSalle Machine Tool, Inc., Warren, Mich.

Filed Oct. 30, 1972, Ser. No. 302,052
Int. Cl. F16h 27/02
U.S. Cl. 74—89.15 6 Claims

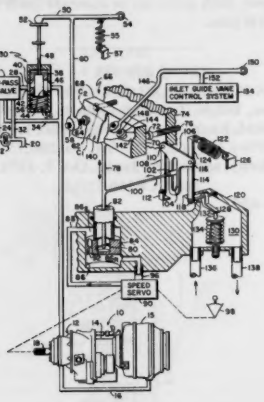


A single spindle mechanical feed unit comprising a slide and a single rotatable spindle mounted for advancing and retracting movement relative to the slide. A drive shaft is arranged in a coaxial driving relation with the spindle and a nut and screw assembly capable of applying thrust forces to the spindle is also axially aligned with the spindle. A simplified drive mechanism is provided for rotating the drive shaft and for driving the nut and screw assembly at variable rates of speed.

3,803,929
CONTROL SYSTEM INCORPORATING AN IMPROVED THREE-DIMENSIONAL CAM ARRANGEMENT

Joseph A. Karol, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 5, 1972, Ser. No. 295,138
Int. Cl. F16h 21/44
U.S. Cl. 74—99 R 8 Claims

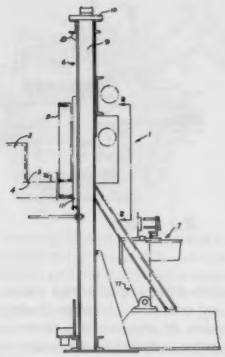


A fuel control system for a gas turbine engine incorporates a three-dimensional cam providing a displacement output as a combined function of a pair of displacement inputs. The cam is guided for movement in a reference plane in two directions in response to the two displacement inputs. A contoured cam surface is defined by curves having a distance from the reference plane representing the relationship between the inputs and the displacement output of a follower abutting the cam surface.

3,803,930
CONTROL DEVICE

Howard C. Gebhart, Chesterfield, and Nick Tichy, Affton, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 22, 1973, Ser. No. 334,893
Int. Cl. F16h 29/00
U.S. Cl. 74—116 15 Claims

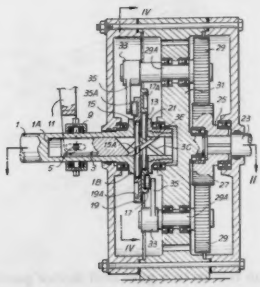


A control device, useful in the manufacture of electronic air filter cells, is provided which controls movement of a plate holding fixture. The device is synchronized with a plate manufacturing machine, for example, a punch press so that plates can be fed from the manufacturing machine to the fixture. The device includes a skip mechanism which permits two strokes of the plate manufactured machine for each movement step of the control device.

3,803,931
VARIABLE-SPEED TRANSMISSION DEVICES

Vasco Bianchini, Piazzadel Popolo 31, and Pietro Masoni, Via Prov. Francesca Nord 100, both of Pisa, Italy

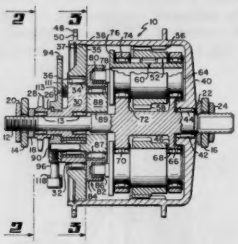
Filed Feb. 2, 1972, Ser. No. 222,904
Claims priority, application Italy, Feb. 4, 1971, 9352/71
Int. Cl. F16h 29/04
U.S. Cl. 74—117 7 Claims



A variable-speed transmission device comprises an output shaft rotated from a first eccentric member through unidirectional driving couplings. The eccentric member,

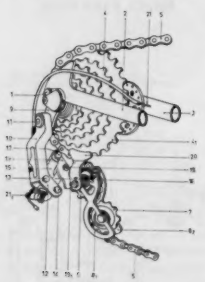
which is driven by an input shaft, has a variable eccentricity which adjusts the speed ratio between the input and output shafts. A second eccentric member, balances the first eccentric member.

3,803,932
WADDINGTON DRIVE
Clive Waddington, 180 Euclid Ave., Stratford, Conn.
Filed July 26, 1972, Ser. No. 275,221
Int. Cl. F16h *29/04*
U.S. Cl. 74—117 **20 Claims**



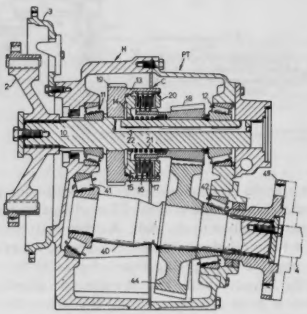
A Waddington drive is positioned within a hub, each as a bicycle hub, and connected between the hub and an operator-powered sprocket. In one form the drive is torque responsive and varies its ratio to maintain a constant input torque to the sprocket, thereby permitting the operator to pedal at an optimum pace while providing optimum torque output to the wheels. In another form the drive is torque responsive as a function of input R.P.M. thereby enabling the operator to pedal at a selected pace and still satisfy the output torque requirements.

3,803,933
GEAR SHIFT DEVICE PARTICULARLY FOR BICYCLES
Roger Henri Marius Huret, and Jacques Andre Huret, both of 60, Avenue Felix Faure, Nanterre, France
Filed June 19, 1972, Ser. No. 264,220
Claims priority, application France, Sept. 17, 1971, 71.33636
Int. Cl. F16h *11/00*
U.S. Cl. 74—217 B **2 Claims**



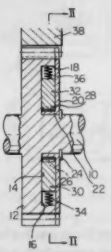
The invention relates to a gear shift device particularly for bicycles ensuring the efficient guidance of the chain, this device comprising a deformable parallellogram of which one of the branches is fixed and forms the support of the gear shift, and of which the opposite branch, in movement during the translation, supports the guiding and tensioning rollers for the chain passing over the free wheel, the gear shift device being characterized in that the branch of the parallellogram supporting the rollers is part of an anchor directed toward the free wheel, this anchor in addition being located in a plane parallel to the plane of the rollers, but offset slightly, with respect to the plane of the rollers, toward the deformable parallellogram.

3,803,934
POWER TRANSMISSION WITH HELICAL TOOTH TAPERED GEARS ON INPUT AND OUTPUT SHAFTS
Edward C. Yokel, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.
Filed Nov. 29, 1972, Ser. No. 310,576
Int. Cl. F16h *3/14*
U.S. Cl. 74—361 **6 Claims**



A power transmission for transmitting power from an input shaft and to an output shaft which is inclined at an angle to the input shaft, said transmission having means including a second shaft for driving the inclined output shaft in the reverse direction with equal power to that in which it is driven in the other direction. The transmission includes a clutch means for the input shaft and the second shaft and also includes meshing gears between the input, second and output shafts and which gears are in constant mesh with one another and selectively engaged by the clutches. The input shaft carries a helical, tapered pinion gear while a reversing lay-shaft carries a helical cylindrical gear, both gears are in constant mesh with a larger tapered, helical gear.

3,803,935
ANTI-BACKLASH GEARING SYSTEM
Kouji Nozawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan
Filed Aug. 15, 1972, Ser. No. 280,759
Claims priority, application Japan, Oct. 7, 1971, 46-78379
Int. Cl. F16h *55/18*
U.S. Cl. 74—409 **4 Claims**



An anti-backlash gearing system consisting of a main drive gear having at least two radially extending guide slots, an aux-

iliary gear element which is identical with the main drive gear in outer diameter and the number of gear teeth and which is rotatable with respect to the main drive gear, the auxiliary gear element having a hub member which extends from one side of the auxiliary gear element and which is formed on its outer periphery with at least two concave portions, at least two weight members each having a sliding portion slidably received in each of the guide slots of the main drive gear and having a projection engaging with each of the concave portions formed on the hub member, and at least two biasing means each disposed in each of the guide slots of the main drive gear for biasing each of the weight members radially inwardly to cause each of the projections of the weight members to engage with each of the concave portions formed on the hub member.

3,803,936

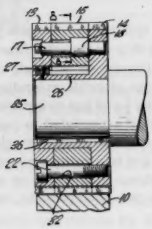
ADJUSTABLE HERRINGBONE GEARS FOR USE IN EMBOSSING, ENGRAVING, AND THE LIKE

Bernard Kroeper, Somerville, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 6, 1972, Ser. No. 295,776

Int. Cl. F16h *55/18*

U.S. Cl. 74—409 **2 Claims**



An improved set of herringbone gears for use in rotary embossing and engraving apparatus. One of the gears has an adjustable center portion in order to obtain positive contact between the teeth on the adjustable center portion and the teeth of the mated gear to prevent backlash and longitudinal side thrusts in the gears.

3,803,937

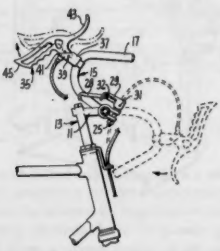
BICYCLE BRAKE LEVER

Lowell B. Johnston, Box 531, Daly City, Calif.

Filed Dec. 8, 1972, Ser. No. 313,579

Int. Cl. G05g *13/00*; **B62k** *23/06, 21/22*

U.S. Cl. 74—489 **10 Claims**



An improvement for bicycles having drop-style handlebars. The brake handles are extended to both sides of its pivotal point of attachment to the handlebars. A quick release connection of the handlebars to its support post permits rotation of the handlebars with respect to the support post.

3,803,938

DEFORMABL SUPPORT FOR STEERING ASSEMBLY

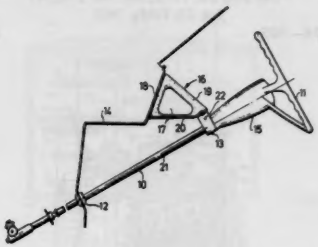
Dieter N. Bratke, Russelsheim/Main, and Klaus Brandel, Worrstadt, both of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1973, Ser. No. 282,419

Claims priority, application Germany, Sept. 2, 1971, 2143935

Int. Cl. B62d *1/18*

U.S. Cl. 74—492 **7 Claims**



A motor vehicle steering column assembly has a deformable support member secured to an upper tube portion of a steering shaft of the assembly, and the deformable support member is adapted to be secured to a frame member of the vehicle. The deformable support member has a hollow generally triangular cross-sectional configuration and may comprise two interconnected side pieces connected to a mechanically weaker base piece, and secured at the base piece to the upper tube portion of the steering column assembly, such that the base piece is inclined to the axis of the steering column and divergent therefrom in a direction towards the front of the vehicle when installed therein. The deformable support member may also be formed as a hollow prism-like body having the same general cross-sectional configuration as the above-mentioned deformable support member, by utilizing two such members interconnected by an intermediate portion and installed with the same orientation.

3,803,939

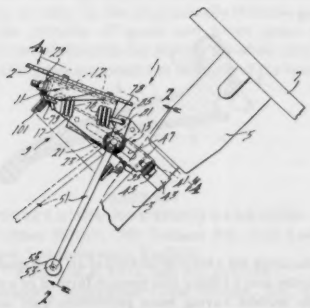
ADJUSTABLE TILTABLE STEERING COLUMN

James L. Schenten, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 1, 1972, Ser. No. 311,089

Int. Cl. B62d *1/18*; **G05g** *5/16*

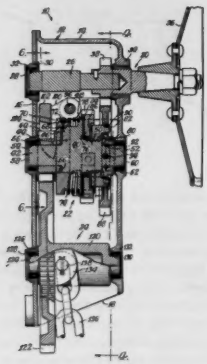
U.S. Cl. 74—493 **15 Claims**



Adjustable tilting steering column including two brackets, one of which is connected to an instrument panel and the other of which is connected to the column and slideable within

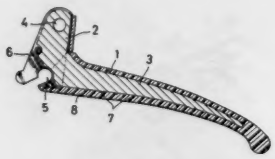
the first bracket. A spring biased clamping cam causes the outer bracket to clamp the inner bracket in any one of an infinite number of positions throughout a range of movement of the movable bracket.

3,803,940
HAND BRAKE MECHANISM
Laurence T. La Belle, Dunedin, Fla., assignor to Miner Enterprises, Inc., Chicago, Ill.
Filed July 31, 1972, Ser. No. 276,747
Int. Cl. G05g *1/08*
U.S. Cl. 74—505 **6 Claims**



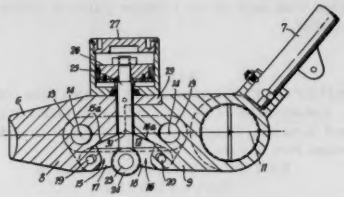
A high power hand brake mechanism having an operating spindle, a winding drum unit, an intermediate control shaft, means for coupling the control shaft to the operating spindle, and means for coupling the winding drum unit to the control shaft.

3,803,941
BRAKE LEVER FOR A BICYCLE
Kunihiko Yoshikawa, Soka, Japan, assignor to Kabushiki Kaisha Yoshikawa Seisakusho, Tokyo, Japan
Filed Oct. 20, 1972, Ser. No. 300,408
Int. Cl. G05g *1/10*, *1/04*
U.S. Cl. 74—523 **3 Claims**



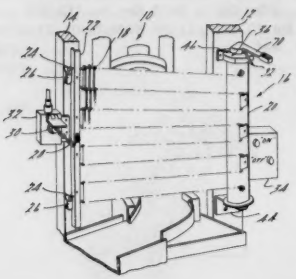
A brake lever for a bicycle formed of an L-shaped lever having a shorter and a longer arm portion formed of a sheared-off flat plate section having been previously cold worked; the shorter arm portion being adapted for attachment to a bicycle bracket and to a brake-actuating wire, the longer arm portion having projections along one edge thereof; and plastic tube means providing a gripping surface encompassing the longer arm portion engaged by the projections.

3,803,942
PAWLS
James Daniel Duggan, London, England, assignor to Drexel Equipment (U.K.) Limited, London, England, a part interest
Filed Aug. 9, 1972, Ser. No. 279,657
Claims priority, application Great Britain, Aug. 10, 1971, 37591/71
Int. Cl. F16d *41/12*
U.S. Cl. 74—577 R **13 Claims**



A collapsible pawl applied to emergency release of a mooring chain or cable of a ship or rig acts either directly on a chain guided over a bowstopper or wildcat, or indirectly, via a toothed ring, on a chain or cable extending around a wildcat, winch, or windlass. The pawl has two parts arranged one after the other therealong and articulated to each other by a toggle and also by two lateral links. The toggle is operated by a hydraulic ram connected to a central pin of the toggle. To collapse the pawl to release the chain or cable, the toggle is operated to cause the two pawl parts to turn about transverse axes.

3,803,943
MACHINE GUARD
Alexander F. Wołoszyk, Frasery, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 1, 1972, Ser. No. 302,703
Int. Cl. F16p *1/00*
U.S. Cl. 74—612 **4 Claims**



A self-retracting machine guard comprising a flexible metal fabric or mesh providing a fence-like structure about a machine and which may be rolled up for storage. The preferred roller structure is of a spring loaded clutch release type.

3,803,944

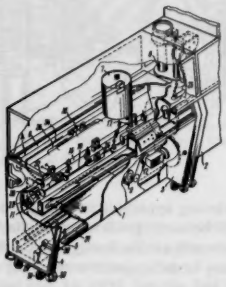
BEDPLATE WITH DRIVE MECHANISM FOR INSTALLING PROCESS UNITS OF AUTOMATIC PROCESSING LINE

Alexandr Alexandrovich Bulatov, ulitsa Zabaikalskaya, 4, kv. 17, and Albert Ivanovich Chesnokov, ulitsa Gavrskaya, 11, kv. 182, both of Leningrad, U.S.S.R.

Continuation of Ser. No. 128,862, March 29, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,801

Int. Cl. F16h *37/06*

U.S. Cl. 74—665 F 2 Claims



A bedplate with a drive mechanism for installation of process units of automatic processing lines in which the supporting surface for the installation of the process units is arranged along the longitudinal axis of the bedplate while the driving shaft is located under the supporting surface, also along the longitudinal axis of the bedplate. A cross member is located on one side of said driving shaft, said cross member having inter surfaces which mount coupling units and through which the process units are driven by the driving shaft, with said coupling units being adapted for displacement along the axis of the driving shaft and for being turned through 180° with relation to their respective output end of the shaft connected to the process units.

3,803,945

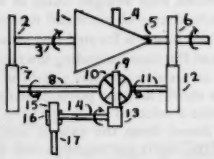
FEED BACK SYSTEMS FOR A ROTARY MECHANICAL TRANSLATING DEVICE

Thomas A. W. K. Watson, 2720 Gover, Apt. 24, Montreal, Quebec, Canada

Filed Nov. 4, 1971, Ser. No. 195,661

Int. Cl. F16h *37/06*

U.S. Cl. 74—675 4 Claims



In a rotary mechanical translating device which exhibits rotary mechanical amplification the characteristics of the translating device may be altered by negative or positive feedback. These translating devices have a power gain since they transfer power from a prime mover to an output shaft as a magnified function of the power required to rotate it's input shaft. A portion of the output is fed back through a mixing device to the input of the translating device. When the feedback is negative it reduces back lash and improves the positioning accuracy of the translating device and when the feedback is positive it increases the gain of the translating device.

3,803,946

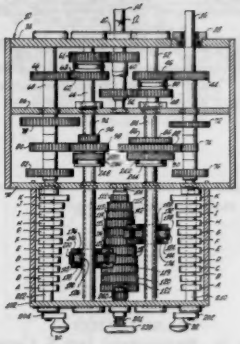
GEAR TRANSMISSION

Charles L. Peters, Jr., Anaheim, Calif., assignor to Box Innards, Inc., Anaheim, Calif.

Filed Dec. 18, 1972, Ser. No. 315,800

Int. Cl. F16h *3/02*

U.S. Cl. 74—745 11 Claims



Within a sealed housing, each of two pairs of plates carries upper and lower gears in mesh, the upper gears being slidable on and rotatable with a respective idler shaft, such shafts being parallel to and above an idler shaft on which are fixed a plurality of gears wherein each has a different number of teeth than the rest. The plate pairs are rotatable on their shafts to swing away from and toward the lower shaft, and are independently movable via a chain and sprocket to be selectively positioned adjacent any of the plurality of gears. Cams are provided to move the plate pairs inwardly so that their lower gears mesh with those of the plurality of gears adjacent which they are positioned. An input shaft is adapted to drive one of the upper idler shafts, and the other of such shafts is adapted to drive an output shaft, via gear couplings formed of longitudinally shiftable gears which are selectively positioned to effect any of a plurality of ratios between the coupled shafts. Via other shiftable gears between the output shaft and the driving idler shaft, and between the input shaft and a further output shaft, the input shaft is adapted to drive either output shaft at a fixed ratio and effect operation of the other output shaft at any of a plurality of ratios via the longitudinally shiftable gears and those of the plurality of gears and lower gears meshed therewith. Control elements for moving the chain and operating all shiftable gears are located at the front of the housing.

3,803,947

EPICYCLIC CHANGE SPEED GEAR HUBS

Anthony William Hillyer, 208 Gotham Rd., East Leake, Leicestershire, Loughborough, England

Filed Jan. 6, 1972, Ser. No. 215,758

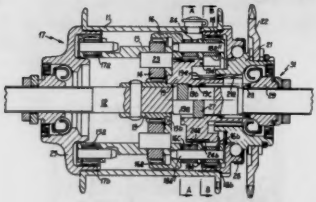
Claims priority, application Great Britain, Jan. 8, 1971, 1123/71

Int. Cl. F16h *3/44*

U.S. Cl. 74—750 B 8 Claims

In an epicyclic 3-speed hub wherein an input motion is applied selectively to a planet cage or to a gear ring through a coupling member, a direct drive is transmitted from the

coupling member to the gear ring through a pawl and ratchet means thus to ensure a positive drive connection between an



input member and the hub shell irrespective of the gear selected and any maladjustment of the gear.

3,803,948

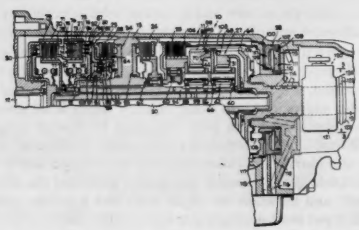
TRANSMISSION

Julius A. Clauss, Jr., Birmingham; Jack S. Conley, Milford, and Robert W. Lemon, Farmington, all of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 67,326, Aug. 27, 1970, Pat. No. 3,724,626. This application Dec. 4, 1972, Ser. No. 312,179

Int. Cl. F16h *57/10*

U.S. Cl. 74—763 **14 Claims**



An automatic transmission providing variable speed ratio and reverse drives between drive and driven shafts and including friction-engaging devices, in the form of friction clutches and brakes, for establishing the drives. The devices are operable by hydraulic servomotors, certain servomotors each having first and second pistons arranged in tandem, with the first piston being movable by hydraulic fluid to engage the associated friction device, the second piston being movable by hydraulic fluid to also move the first piston during the application of hydraulic fluid to the first piston to thereby substantially double the effective area of the pistons of the servomotor to provide additional increased pressure to the engaged friction device. The transmission also includes an hydraulic governor fixed to the driven shaft by a locking spring clamp connector positively holding and keying the governor to the shaft in a simple assembly operation and in a manner to insure sealing between fluid-passage ports in the shaft and in the governor body for transfer of activating hydraulic fluid.

3,803,949

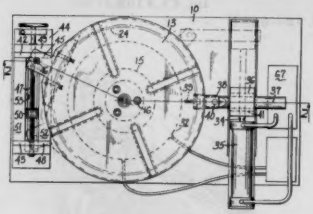
INDEXING MECHANISM

Walter P. Rokosky, and Michael J. Rokosky, both of Hamden, Conn., assignors to Rokler Manufacturing Company, Hamden, Conn.

Filed Apr. 13, 1972, Ser. No. 243,671

Int. Cl. B23b *29/32*

U.S. Cl. 74—815 **11 Claims**



An angular indexing apparatus including a driver member which is rotated between predetermined limits, and upon return carries therewith a table through the predetermined angle. The limits may be set to predetermine any angle within a given angle.

3,803,950

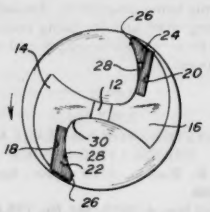
MAKING AND SHARPENING A ROUTER BIT

Ernest Wasser, N. Leswing Ave., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 128,741, March 29, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,290

Int. Cl. B21k *21/00*; B26d *1/12*

U.S. Cl. 76—101 A **3 Claims**



A router bit for use with a power driven spindle is adapted for the cutting of plastic, wood and certain soft metals. This router bit is formed with straight flutes in which the cutting edge portions are inserts of hardened material such as tungsten carbide. Each insert is formed and mounted in the body to provide a short flat face extending inwardly from the outer cutting edge to an arcuate concave relief formed in the face of the insert. This short flat face portion of the cutting edge is formed to provide a selected angle of 15° to 35° to a theoretical radial line drawn from the axis of the router bit to the cutting edge of the insert and requires only a very little grinding on the face to sharpen and reshape this edge.

3,803,951

METHOD OF FORMING AN EXTRUSION DIE

Rodney D. Bagley, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

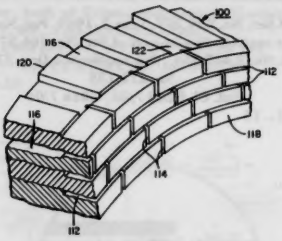
Filed Oct. 10, 1972, Ser. No. 295,813

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 R **4 Claims**

A die for extruding a matrix with essentially circumferential walls is formed by helically winding a slotted and grooved strip of material about a central hub, and bondng or otherwise join-

ing the thus-wound strip material together as an inegral body. The strip material is provided with a longitudinal groove and a



plurality of transverse slots communicating with such groove which combine to form discharge outlets for extruding thin-walled, small cell sized matrices.

3,803,952

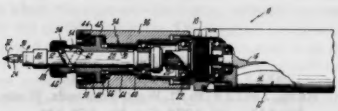
DRIVE CONTROL UNIT FOR A POWER TOOL

Clarence F. Whale, Jr., Mayfield Heights, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed Apr. 14, 1972, Ser. No. 244,163

Int. Cl. B25b *21/00*

U.S. Cl. 81—52.4 R **8 Claims**



Fastener setting power tool having a one-way brake between a housing and a sleeve concentrically supported for rotation within the housing, and a drive control member operable for selectively activating the brake to limit rotation in one angular direction to a preselected displacement.

3,803,953

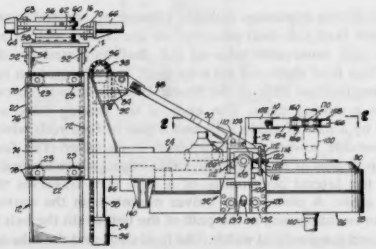
ORIENTING APPARATUS FOR THREADED WELL PIPE

Bela Geczy, Glendale, and Carl Alfred Wilms, La Habra, both of Calif., assignors to Byron Jackson Inc., Long Beach, Calif.

Filed Mar. 1, 1972, Ser. No. 230,835

Int. Cl. B25b *13/00, 21/00, 13/50*

U.S. Cl. 81—53 A **5 Claims**



Apparatus for horizontally orienting vertical well pipe to initiate the threading of the pipe within a power tong assembly including pipe stabbing apparatus having a support arm of adjustable length, a pivot support carrying the arm in horizontally pivoted relation, and a stabbing head mounted to the support arm and defining two vertically disposed faces converging into a horizontal angle. The stabbing head is adapted for mounting to said support arm in a plurality of horizontal positions for permitting the faces to be presented in a plurality of directions while moved through a horizontally arcuate path to move vertically disposed pipe into horizontal position for entry into said power tong assembly. A hydraulic cylinder is mounted in pivoted relation to the support and to the arm for moving the stabbing head through the arcuate path.

3,803,954

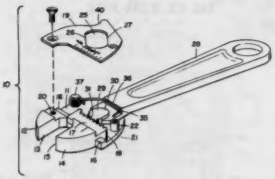
ADJUSTABLE RATCHET WRENCH

Paul E. Lenker, Davenport, Iowa, assignor to Davenport Tool Co., Goldridge, Iowa

Filed Sept. 21, 1972, Ser. No. 290,969

Int. Cl. B25b *13/18*

U.S. Cl. 81—126 **4 Claims**



A hand operated ratchet wrench employs a single handle pivoted at one end in a head, the handle end having pinion teeth engaging rack teeth on a movable jaw to urge the latter toward a fixed jaw when the handle is pivoted relative to the head. The handle is retained in the head by means which permit the two sets of teeth to be optionally disengaged so that the spacing between the two jaws can be adjusted independently of the angle of the handle with respect to the jaws, and the handle can be positioned relative to the head for optimum efficiency of operation regardless of the spacing between the jaws. A spring between the handle and the head permits ratcheting action.

3,803,955

SINGLE-SPINDLE ROTARY MACHINE TOOL

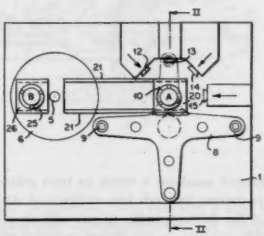
Georg Walk, Rheydt, Germany, assignor to A. Monforts, Monchengladbach, Germany

Filed Jan. 22, 1973, Ser. No. 325,938

Claims priority, application Germany, Jan. 20, 1972, 2202592

Int. Cl. B23b *13/02*

U.S. Cl. 82—2.5 **8 Claims**



Single spindle rotary machine tool includes a spindle stock a workpiece spindle drivingly mounted in the spindle stock, and having a fixed axis, the workpiece spindle having a head, a workpiece chuck seated on said spindle head, the workpiece

chuck, in operating position thereof on the spindle head, having an axis rectilinearly aligned with the fixed axis of the workpiece spindle, a tool turret shaft mounted in the spindle stock below and parallel to the workpiece spindle, a rotary disc spaced from the workpiece spindle on the spindle stock and revolvable about an axis extending parallel to the axis of the workpiece spindle at least two workpiece chucks releasably installable at given locations of the rotary disc,and sliding carriage means for transporting the workpiece chucks respectively between the rotary disc and the workpiece spindle, the rotary disc and the sliding carriage means being cooperatively associated with one another for automatically exchanging one of the workpiece chucks with another of the workpiece chucks at the operating position thereof on the spindle head.

3,803,956

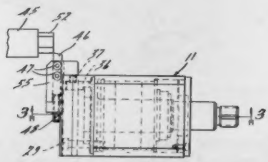
CAM CONTROL TOOL FOR MACHINING A ROTATABLE WORKPIECE

John R. Scaduto, 14460 E. State Fair, Detroit, Mich.

Filed May 1, 1972, Ser. No. 249,263

Int. Cl. B23b *3/28*

U.S. Cl. 82—19 **1 Claim**



A tool is mounted on a slide and advanced against the tension of a spring by a cam for machining a predetermined form on a rotatable workpiece which is driven in synchronism with the cam. While the synchronized workpiece and cam are rotated, the tool bit may be moved axially or radially of the workpiece to produce the length and the depth of the cut.

3,803,957

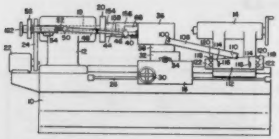
VARIABLE ELLIPTICAL AND VARIABLE PROFILE TURNING ATTACHMENT FOR A LATHE

Dale Montieth Johnston, and Nelson Paul Keith, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 25, 1972, Ser. No. 257,019

Int. Cl. B23b *3/28*

U.S. Cl. 82—19 **20 Claims**



An attachment used on a lathe to turn pistons includes a tool which is driven through two reciprocal strokes for each revolution of the lathe spindle to provide an elliptical cross-sectional configuration on the piston includes means for varying the stroke of the tool in accordance with a predetermined pattern so that the elliptical cross-sectional configuration is varied, and also includes means to vary the position of the tool independently of the stroke of the tool in accordance with a predetermined pattern so that the profile of the piston is varied.

3,803,958

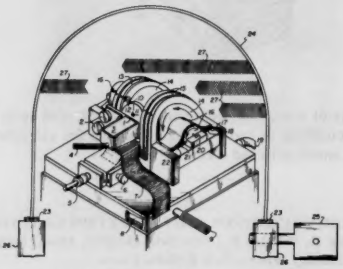
ULTRA THIN SECTIONING WITH ULTRA SHARP DIAMOND EDGE AT ULTRA LOW TEMPERATURE

Humberto Fernandez-Moran, 5807 Dorchester Ave., Chicago, Ill.

Division of Ser. No. 829,267, June 2, 1969, Pat. No. 3,646,841, which is a continuation-in-part of Ser. No. 466,877, June 22, 1965, Pat. No. 3,447,366. This application Dec. 22, 1971, Ser. No. 211,135

Int. Cl. B26d *7/08*; **G01n** *1/06*

U.S. Cl. 83—15 **8 Claims**



Ultra sharp diamond edge is used for molecular and submolecular sectioning at ultra low temperature and as a high intensity point source for the emission of electrons rons and neutrons.

3,803,959

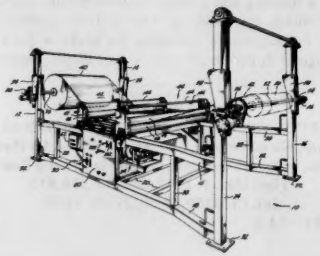
BELT SLITTING APPARATUS

Darrell G. Rung, 23422 97th Pl. West, Edmonds, Wash.

Filed May 30, 1972, Ser. No. 257,936

Int. Cl. B26d *7/14*

U.S. Cl. 83—18 **10 Claims**

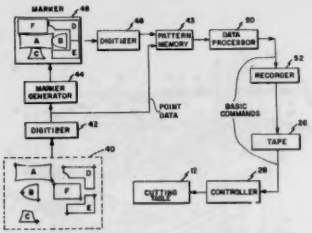


A belt slitting apparatus includes a frame, an adjustable and removable feed roll shaft mounted on the frame, and an adjustable and removable take-up roll shaft mounted on the frame. The feed shaft and take-up shaft are mounted on opposite longitudinal ends of the frame. Intermediate these two shafts is a cutting table. The ends of the cutting table are flanked by a pair of guide rolls and a pair of feed rolls which are adjustable toward and away from each other. The feed table has a pair of laterally adjustable edge guides for maintaining the lateral positioning of a belt as it traverses the cutting table. A plurality of knives mounted on the cutting table can be interposed in the path of the belt to slit the belt to any desired longitudinal width. The feed shaft and the take-up shaft are independently driven by hydraulic motors. Likewise, the guide rolls and feed rolls flanking the cutting table are driven by a hydraulic motor. Specific hydraulic circuitry provides for independent control of the hydraulic motors and allows the speed of each of the hydraulic motors to be varied from zero to maximum independent of the remaining motors.

3,803,960
SYSTEM AND METHOD FOR CUTTING PATTERN PIECES FROM SHEET MATERIAL

David R. Pearl, West Hartford, and Samuel Clifford Robison, Manchester, both of Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Dec. 11, 1972, Ser. No. 314,144
Int. Cl. B26d 1/10; A41h 43/00
U.S. Cl. 83—56 **10 Claims**

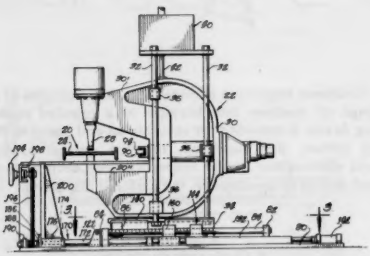


A system and method for cutting multiple pattern pieces from a layup of sheet material employing two-stage digitizing to produce a cutting program in which contour segments of individual pieces are cut by a cutting blade in different directions about the pattern pieces. The direction in which a particular segment of a pattern piece contour is cut and the order in which the segments are cut are selected to most easily facilitate the cutting operation. The point on any given pattern piece toward which a cutting blade is advanced from different directions is generally the point of closest approach to an adjacent or contiguous pattern piece in the marker cut in the sheet material. The feed rate and tangency of the cutting blade are also regulated at sensitive cutting points such as the points of closest approach to an adjacent pattern piece.

3,803,961
APPARATUS FOR FABRICATING ELONGATED STRUCTURAL MEMBERS, OR THE LIKE

Raymond L. Valente, Kankakee, Ill., assignor to Manco Mfg. Co., Bradley, Ill.

Continuation-in-part of Ser. No. 94,474, Dec. 2, 1970, Pat. No. 3,712,161. This application Oct. 17, 1972, Ser. No. 298,336
Int. Cl. B26f 1/02
U.S. Cl. 83—71 **6 Claims**

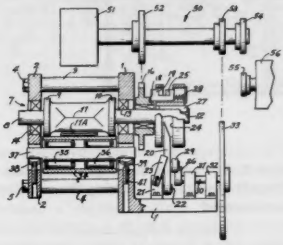


A machine for effecting fabrication of a structural member including tool means, drive means for advancing a structural member longitudinally of a work station, and apparatus for properly positioning the tooling means with respect to predetermined locations on the structural member at which tooling operations are to be performed. The positioning apparatus includes an indexing arrangement, as well as gauge means which permit the automatic or semi-automatic operation of the machine, such that the tooling means may be initially positioned with respect to a transverse axis of the structural member and then moved along the axis in relatively short, controlled increments. The amount of error in positioning of the tool is maintained at a minimum and is at all times no greater than half the distance of the spacing of teeth on a gear rack which is engaged by pressure holding means.

3,803,962
CUT-TO-LENGTH MACHINE

George Koslow, 149 Church St., New York, N.Y.

Filed June 23, 1972, Ser. No. 265,701
Int. Cl. B23d 25/02; B26d 5/22
U.S. Cl. 83—110 **9 Claims**

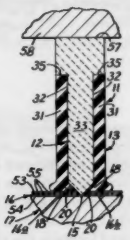


A machine for cutting predetermined lengths of material. The material is fed through a cutting die by friction rollers which are coupled to a first gear train to a clutch operating mechanism. A second gear train operates a cutoff knife through the driven gear of the clutch. The cutoff knife moves with the material so there is no jamming.

3,803,963
CUTTER WITH STRIPPER

Robert F. Hunt, Concord, Tenn., assignor to International Paper Company, New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 190,918
Int. Cl. B26d 1/22
U.S. Cl. 83—116 **7 Claims**



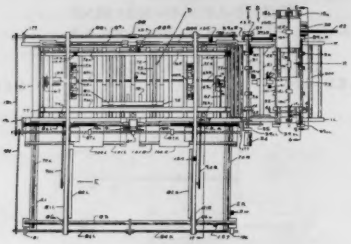
A cutter blade is provided with resilient means having sections for engaging the web adjacent the cut being made and these sections exert oppositely directed tensile forces on the web on the opposite sides of the cut to assist in separating the cut edges being formed. The resilient means may also cushion the blade against vibration which would cause the blade edge to chip or dent. The blade may be made of a ceramic material encapsulated in a resilient sheath with only the cutting edge of the blade exposed for cutting the web.

3,803,964

MACHINE FOR TRIMMING THE EDGE OF PANELS

Donald B. Morse, and Bernard A. Pribish, both of Joliet, Ill., assignors to Kemlite Corporation, Joliet, Ill.

Division of Ser. No. 99,135, Dec. 17, 1970, Pat. No. 3,769,864.
This application June 14, 1973, Ser. No. 369,850
Int. Cl. B26d *3/12*; B65h *35/02*
U.S. Cl. 83—154 **7 Claims**



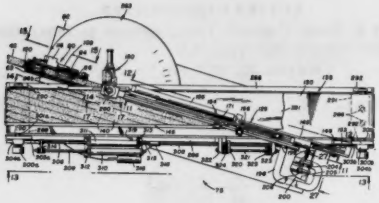
An apparatus for trimming the edges of panels including gripping and holding means for turning the panels over after they have been trimmed.

3,803,965

APPARATUS FOR PRODUCING REINFORCED FABRIC

Sterling W. Alderfer, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Filed May 24, 1972, Ser. No. 256,472
Int. Cl. B26d *5/22*; B65h *17/36*
U.S. Cl. 83—155 **17 Claims**



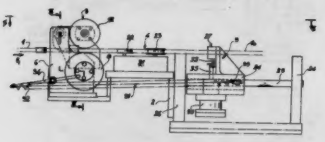
The subject disclosure is directed to a method and apparatus for making reinforced fabric. A reinforcement is encapsulated within a ribbon of uncured elastomeric material. The ribbon is preliminarily oriented on a lead-in table, and a shuttle head translates longitudinally of itself from a position over an assembly table to a position over the lead-in table. The lead-in table is then raised to place the ribbon in juxtaposition with the shuttle head. After positively gripping the ribbon the shuttle head translates to a position over the assembly table—thereby metering a strip of ribbon having a predetermined length—and then lowers accurately to deposit the strip on the assembly table. A guillotine means severs the strip from the ribbon, and the assembly table indexes the strip so that the successively deposited strips are stitched to the immediately preceding strip. The resulting belt of fabric has the reinforcement therein oriented at a preselected bias because the assembly table may be selectively oriented with respect to the fixedly oriented lead-in table, shuttle head and guillotine means.

3,803,966

APPARATUS FOR AUTOMATICALLY CUTTING A CONTINUOUSLY ADVANCING TUBE INTO SELECTED LENGTHS

Alain Edouard Plegat, Asnieres, France, assignor to Societe-Anonyme Des Usines Chausson, Asnieres, France

Filed July 3, 1972, Ser. No. 268,612
Claims priority, application France, July 5, 1971, 71.24459
Int. Cl. B23d *21/00, 25/04*
U.S. Cl. 83—294 **8 Claims**



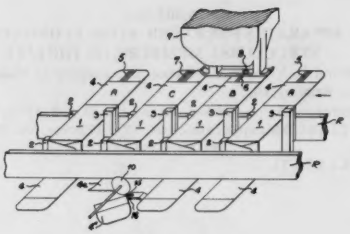
The machine comprises a measuring device, a guide assembly and a cutting device comprising a resiliently retractable carriage supporting a cutting mechanism comprising gripping means and a shearing mechanism actuated according to the time established by said measuring device and which controls a common driving component.

3,803,967

APPARATUS FOR SEVERING PANELS FROM REJECTED CARTONS

William B. Leavens, Jr., Llewellyn Park, West Orange, N.J.

Filed Oct. 25, 1972, Ser. No. 300,682
Int. Cl. B26d *5/38*
U.S. Cl. 83—371 **5 Claims**



In electronic inspection of codes on printed cartons to avoid stoppage of machine line because of a rejected carton, a cutting device is provided for severing an end panel of the rejected carton, the mutilated, rejected carton continuing without interruption in the inspection line until at the end thereof, due to its appearance, the carton is discarded.

3,803,968

LAMINATE CUTTER

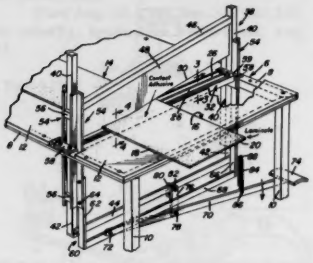
Charles R. Black, 127 S.W. 51st Ter., Cape Coral, Fla.

Filed Aug. 29, 1972, Ser. No. 284,595
Int. Cl. B26d *5/10, 7/20*
U.S. Cl. 83—620 **4 Claims**

A work supporting precision cutting apparatus, for example, an appropriate leg supported table for cutting high pressure laminates expressly designed for use in the cabinet industry, more precisely, laminates which have been sprayed with contact adhesive and which are expeditiously cut into strips

designed and adapted to edge cabinet doors.

In keeping with prevailing shop practice it has been necessary, as is known, to cut strips from a sheet of pressure laminate Formica, for example, on a support surface using a table saw. Likewise and following the sawing step it is customary procedure to spray the applicable surface of the cut strips with contact adhesive. This manner of accomplishing the result is laborious, time-consuming and perplexing. For instance, if the sheet of laminate is sprayed before stripping on a table saw,



chips of laminate stick to the adhesive and virtually make the cut strips useless. An acceptable solution of the prevailing and exasperating problem invokes the use of a double shearing action which, in turn, involves a vertically liftable and lowerable cleaving blade the cutting edge of which is movable between two coplanar closely spaced fixed bed blades, there being no chips and with the result that the discardable and useless piece is freed, cut out and dropped into an accumulating or collecting bin without coming into contact with the strip to be used.

3,803,969

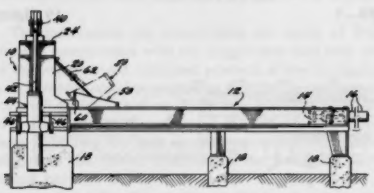
SCRAP SHEAR WITH LEVER DRIVE

Tfja S. Jouhal, and William E. Brake, both of Cordele, Ga., assignors to Harris Press & Shear Corporation, Cordele, Ga.

Filed Apr. 19, 1972, Ser. No. 245,430

Int. Cl. B26d *5/12*

U.S. Cl. 83—627 **1 Claim**



A scrap metal shearing apparatus includes a vertically movable shearing head which is reciprocated by means of a lever arm pivoted at one end to the frame and actuated at its other end by means of a generally vertical drive ram. Means are provided for permitting slight linear movement of the lever arm in the direction of its longitudinal dimension.

3,803,970

AUTOMATIC RHYTHM DEVICE WITH START AND STOP CONTROLLER FOR CLOCK OSCILLATOR AND A GATE

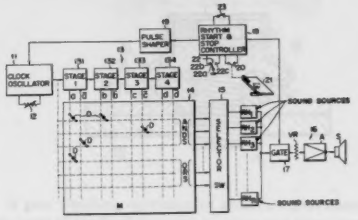
Katsuhiko Hirano, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka, Japan

Filed Apr. 17, 1973, Ser. No. 351,979

Claims priority, application Japan, Apr. 19, 1972, 47-046386

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.03 **3 Claims**



An automatic rhythm device incorporated in an electronic musical instrument comprises as a conventional construction, a clock pulse oscillator, a multistage frequency dividing counter chain, a rhythm pattern pulse encoding matrix, rhythm selector switches, rhythm sound sources and a rhythm sound reproducing system arranged in the order mentioned; and as an additional construction, a normally nonconducting gate circuit coupled between the sound sources and the sound reproducing system and a rhythm start and stop controller which includes a two-way switch operated by a player during performance for an organ section of the instrument and a bistable circuit having two halves alternately brought to reverse positions by the operation of the switch thereby to produce a control signal for alternately starting or stopping the oscillation of the clock oscillator in response to the operation of the switch as well as for causing the gate circuit alternately to be conducting or non-conducting.

The device constituting a rhythm section for the musical instrument enables the start and termination of rhythm sounds without failure.

3,803,971

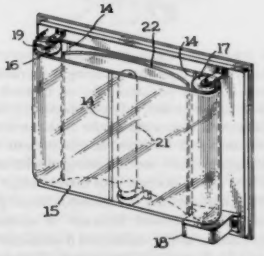
LIGHTED OPTICAL METRONOME

Juan M. del Castillo, Risco 119, Mexico 20, D. F., Mexico

Filed Sept. 6, 1973, Ser. No. 394,795

Int. Cl. G10b *15/00*

U.S. Cl. 84—484 **7 Claims**

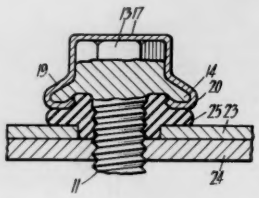


A device to aid in the depicting of the proper tempo for the playing of a sheet of music utilizing an endless opaque belt having vertical transparent bar lines lighted from behind with a sheet of music on translucent paper placed in front of the belt.

3,803,972
FASTENERS

Keith Mills Deutsher, Beaumaris, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 24, 1972, Ser. No. 283,451
Claims priority, application Australia, Sept. 1, 1971, 6134/71
Int. Cl. F16b *23/00, 35/00*
U.S. Cl. 85—1 JP **7 Claims**

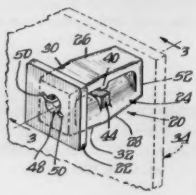


The invention provides a screw fastener having at one end a head which is at least partly enclosed in a capping of a different material compatible electrolytically with the metal to be secured by the screw fastener, such that there is no direct contact between the screw fastener and that metal but rather contact between the metal and the capping, whereby electrolytic corrosion will be substantially reduced.

3,803,973
PLASTIC DRIVE FASTENER

George Martin Rapata, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 9, 1972, Ser. No. 305,196
Int. Cl. F16b *13/06*
U.S. Cl. 85—80 **12 Claims**

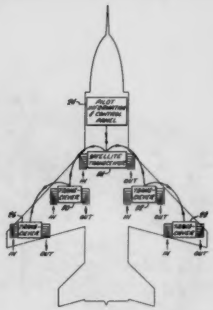


The present invention relates generally to improvements in fasteners of the snap-in type for securing a plurality of workpieces or panels in fixed position relative to each other and more particularly to novel and very practical one-piece plastic snap-in type fasteners. Fasteners of the type contemplated by the present invention and disclosed herein include a head section, and an elongate shank section integral with and extending therefrom. The shank section is of novel design and is centrally apertured longitudinally for accommodating a fastener screw element. The disclosed fastener is substantially Z-shaped in cross-section in the vicinity of a shoulder adapted to engage the side of a workpiece oppositely disposed from the side engaged by the head of the fastener. A unique structural arrangement of the elongate shank section assures the subjection of a diagonal web portion thereof to stress upon initial insertion of the shank section within a work aperture, and a screw element is insertable within a longitudinal aperture centrally disposed within said diagonal web.

3,803,974
FIRE CONTROL SYSTEM

Charles E. Everest, La Habra, and Henry P. Voznick, Arcadia, both of Calif., assignors to William Wahl Corporation, Los Angeles, Calif.

Filed Nov. 3, 1972, Ser. No. 303,501
Int. Cl. F41f *3/06*; **H04q** *9/14*
U.S. Cl. 89—1.5 E **36 Claims**

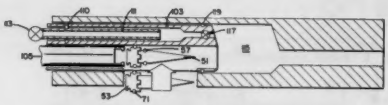


A fire control system that can be readily installed with minimum change on existing aircraft, actually tests all weapon positions and stores a number of status words representing the current state of the various weapon positions. Upon occurence of a selected number of firing conditions such as firing interval, remaining quantity of a salvo to be fired and the fire command, the system will automatically extract from the store of weapon status words, one word corresponding to an unfired weapon of selected type. The extracted word is automatically sent to the weapon firing station in a time division multiplexing arrangement that shares a single communication channel among fire command, test command and sensed status words. Although the system will automatically select an unfired weapon of a chosen type, the pilot is provided with a complete display of status of all weapons and a remaining stores display indicating the total remaining weapons of the respective types. Comparison of a commanded word with the actual status of a given weapon position is employed to provide the pilot with a hung ordnance alarm.

3,803,975
LIQUID PROPELLANT WEAPON

Lester C. Elmore, Portola Valley, and Thomas M. Broxholm, Palo Alto, both of Calif., assignors to Pulsepower Systems Inc., San Carlos, Calif.

Filed Sept. 13, 1971, Ser. No. 179,759
Int. Cl. F41f *1/04*
U.S. Cl. 89—7 **19 Claims**



A small bore liquid propellant weapon fires projectiles transported to the firing chamber in a projectile carrier. The projectile carrier is separated from the projectile just prior to firing the projectile. The projectile carrier can be reconnected with the projectile to extract the projectile from the weapon in the event of a misfire.

The small bore liquid propellant weapon has a reciprocating combustion chamber housing. The reciprocating combustion chamber housing forms a large diameter combustion chamber without ullage and eliminates a lock.

The small bore liquid propellant weapon includes an integral magazine which has its own pump for the liquid propellant. The magazine also has a valve element with high pressure seals that operate only for the life of the magazine and that are discarded with the empty magazine.

3,803,976

AUTOMATIC PISTOL

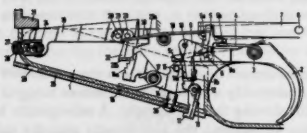
Hinderikus Lucas Visser, Jagershoeve, Jagerslaan 2a., Wassenaar, Netherlands

Filed Aug. 28, 1972, Ser. No. 284,322

Claims priority, application Netherlands, Aug. 30, 1971, 7111952

Int. Cl. F41d *11/02*

U.S. Cl. 89—129 B **5 Claims**



The invention relates to automatic pistols, and visualises the employment of a mechanism the purpose of which is to permit the mode of firing to be changed automatically i.e., from the firing of single rounds to firing a burst of rounds of a predetermined number (and vice-versa). The change in mode is effected through the agency of a lever-like handgrip which is pivotably fitted to the forestock and such that in a folded position the handgrip sets the mechanism to a mode of operation in which only the firing of a single round is possible, and in this folded position the handgrip lies flush with the forestock such that in size and appearance the weapon is conventional. In the unfolded position of the handgrip the weapon has, through the unfolding operation, been set to permit the weapon to fire a burst of a predetermined number of rounds. Furthermore, in the unfolded position, the handgrip provides an auxiliary grip which, when grasped by the normally free hand of the marksman, steadies the aim and contributes to overcoming the inherant characteristic of "elevation creep" of the trajectory during the firing of bursts or continuous firing of such machine-pistols when employed in the role of a sub-machine gun.

The mechanism for determining the mode of firing functions in cooperation with the trigger sear and bolt. Actuation of the trigger in the unfolded position of the handgrip permits a segmentally toothed switching member to pivot step-by-step for each recoiling action of the bolt after the firing of a burst of a predetermined number of rounds, i.e., the stepping actions equalling the bolt recoil movements. Actuation of the trigger in the folded position of the handgrip permits one round only to be fired since the stepping of the toothed member is inhibited by a stop on the handgrip which is interposed in the path of the member in its pivoting action. In this mode of operation the trigger must be released for the mechanism to be reset to fire a following single round.

Removal of the detent in the mechanism, or displacement of the toothed member inhibits operation of the mechanism in the mode for firing bursts of rounds and permits a whole magazine to be fired off or as many rounds as permitted so long as the trigger remains in the pulled condition.

3,803,977

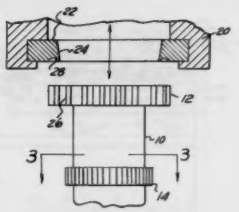
METHOD AND APPARATUS FOR FINISHING GEARS

Joseph A. Psenka, Bloomfield Hills, and Richard W. Tersch, Grosse Pointe Woods, both of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed July 11, 1972, Ser. No. 270,678

Int. Cl. B23f *19/08*

U.S. Cl. 90—1.6 **17 Claims**



A gear finishing operation in which a cutter having a circular array of teeth of the same number and approximate size as that of a gear to be shaved, and having cutting edges at one end of the teeth of identical profile as that to be formed on the gear teeth, the teeth of the cutter being backed off to provide cutting clearance and dimensioned to be received simultaneously in all of the tooth spaces of the gear with circumferential clearance. Relative reciprocation is provided with timed relative circumferential depth feed to shave first one side and then the other of the gear teeth.

3,803,978

SELF DRIVEN TURRET LATHE ROTATING TOOL ATTACHMENT

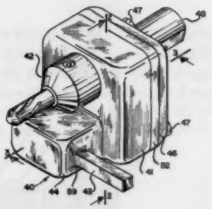
Joseph B. Plevyak, 19 Jefferson St., Newton, N.J.

Division of Ser. No. 87,976, Nov. 9, 1972, Pat. No. 3,733,622.

This application Feb. 5, 1973, Ser. No. 329,492

Int. Cl. B23c *7/02*

U.S. Cl. 90—11 R **1 Claim**

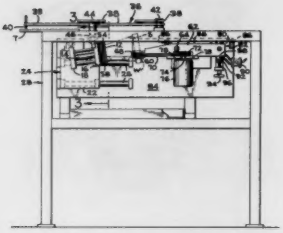


A turret lathe rotating tool attachment is provided with gear ring to effect rotation of a rotary tool in response to a mere bumping of a laterally extending rack bar slide as by the manipulation of the lathe cross slide that can be cam operated from the lathe machine drive. The attachment is self contained and has a rearwardly extending shank that is adapted to be secured in a radially extending opening in the turret head and clamped therein against rotation and axial movement therefrom. A spindle is provided in each of the forms of this invention which will be rotated at sufficient speed to effect with a drill or tapping element a completed operation upon a workpiece. In one of the forms of the invention provision is made to pre-accelerate the drive spindle prior to a main drive through a gear train effecting high speed rotation upon the spindle.

3,803,979
ENGRAVING APPARATUS

James A. Young, 4200 Opal Cliffs Dr., Santa Cruz, Calif.

Filed Aug. 31, 1972, Ser. No. 285,453
Int. Cl. B23c 1/18
U.S. Cl. 90—13.3 1 Claim

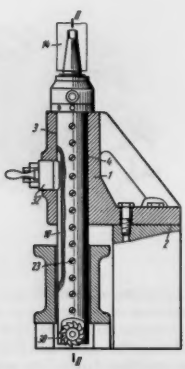


An engraving apparatus which includes means for supporting a workpiece for motion in mutually-perpendicular directions along its surface to be engraved, and an engraving head arranged for motion perpendicular to such surface enabling engraving contact therewith.

3,803,980
ARRANGEMENT FOR MILLING MULTIFACED HOLES WITH AN EVEN NUMBER OF FACES

Alexandr Pavlovich Ivanov, Nevsky prospekt, 139, kv. 76, and Rudolf Alexeevich Romanov, ulitsa Kuibysheva, 21, kv. 54, both of Leningrad, U.S.S.R.

Filed May 7, 1971, Ser. No. 141,194
Int. Cl. B23c 3/26
U.S. Cl. 90—14 3 Claims

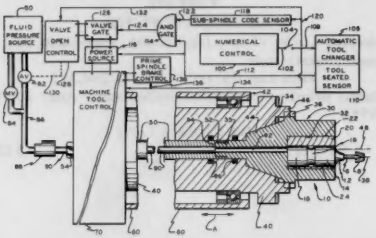


An arrangement for milling multifaced holes with an even number of faces, comprising two end mills mounted on either end of a shaft, so that in milling two opposing faces of the hole at the same time, the axial cutting forces affecting the shaft are equal in value, and opposite in direction, which enables two faces of relatively long holes to be simultaneously milled with high accuracy.

3,803,981
INDEPENDENT DRIVE SUB-SPINDLE MOUNTED FOR ECCENTRIC ADJUSTMENT IN PRIME SPINDLE

Guy Hugo Allgeyer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 17, 1972, Ser. No. 218,287
Int. Cl. B23c 9/00; B24b 5/00
U.S. Cl. 90—15 B 5 Claims



In the embodiment disclosed herein there is shown a unique sub-spindle assembly which includes means integral with the assembly for driving the sub-spindle. A sub-spindle housing is provided for supporting the sub-spindle and the sub-spindle driving means. The sub-spindle housing has a portion of its outer surface shaped to conform to and mate with a standard tool shank receiving means of a prime machine spindle. A power supply is connected to the sub-spindle driving means from the prime machine spindle by a power conduit means extending from the sub-spindle driving means in the sub-spindle housing, and through the housing to the surface portion of the housing which mates with the tool shank receiving means of the prime machine spindle. The termination of the power conduit means at the housing surface is located to coincide with a power conduit continuation located inside of the prime machine spindle. The sub-spindle housing may further include means enabling the capture and retention of the housing by a prime machine spindle, the capturing means advantageously automatically aligning and connecting the housing power conduit means with a power conduit continuation inside of the prime machine spindle. The sub-spindle may be supported in the sub-spindle housing to align the axis of rotation thereof with an axis of rotation of a prime machine spindle which receives the housing. This permits the sub-spindle to be rotated at speeds dependent only upon the sub-spindle driving means integral with the assembly, or speed variances may be obtained by also rotating the prime machine spindle at the same time that the sub-spindle is being rotated. The sub-spindle may also be supported in the sub-spindle housing with the axis of rotation thereof offset from the axis of rotation of a prime machine spindle receiving the housing. This enables the orbiting of the sub-spindle around the axis of rotation of the prime machine spindle when the prime machine spindle is also rotated.

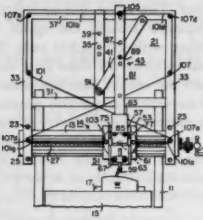
3,803,982
CURVILINEAR SURFACE PLANER

Kenneth L. Lauderdale, New Castle, Pa., assignor to Donald E. Tripp, New Wilmington, Pa., a part interest

Filed Dec. 4, 1972, Ser. No. 311,970
Int. Cl. B23d 5/00
U.S. Cl. 90—31 7 Claims

A curvilinear surface is formed in work on a moveable table by moving a cutting tool over a curvilinear path. The tool is

suspended from a clapper box which is mounted on a slide having a female dovetail mating with a male dovetail affixed to a saddle. The saddle is moveable, perpendicular to the movement of the table during a cutting operation, by rotation of a



screw. A first bar is connected rigidly to the slide and is moveable and slideable with the slide. A second bar is pivotally connected to the first bar and guides the first bar and the tool to move in an arc having the same radius of curvature as the curvilinear surface.

3,803,983

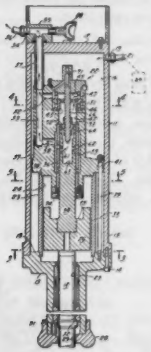
RECIPROCATING HYDRAULIC HAMMER

Lester A. Amtsberg, Utica, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed July 23, 1971, Ser. No. 165,539

Int. Cl. F01l *21/06, 7/18*

U.S. Cl. 91—227 **4 Claims**



A pavement breaker having a reciprocating piston hammer to pound a work steel, wherein a jacket about the tool provides a reservoir of constantly pressurized oil, which pressurized oil drives the hammer on a work stroke, operates a plunger to return the hammer, operates dampers to dampen excessive movement of the hammer beyond its usual impacting point, operates a dump valve to relieve the pressurized condition of the reservoir when the tool is lifted out of pressed relation to the work, and operates a ram to shift a control valve in one direction to interrupt reservoir oil flow to the hammer, the control valve being mechanically shiftable in the opposite direction by the hammer on a return stroke to reestablish reservoir flow to the hammer.

3,803,984

HYDROSTATIC PISTON MACHINE CONSTRUCTION

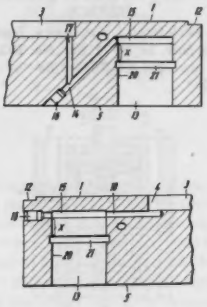
Hans Lachner, Herne, Germany, assignor to Kloeckner-Werke Aktiengesellschaft, Duisburg, Germany

Filed Nov. 20, 1972, Ser. No. 307,988

Claims priority, application Germany, Nov. 20, 1971, 2157704

Int. Cl. F01b *1/00, 13/04*

U.S. Cl. 91—487 **5 Claims**



A disk-shaped control member of a hydrostatic axial or radial annular machine has a front face and a rear face. The front face is provided in each half thereof with a kidney-shaped opening, an annular bearing support surface, an annular groove intermediate the surface and the openings, and hydrostatic bearings in form of two pair of shallow circumferential recesses arranged with radial spacing at two diametrally opposite dead-center locations of the control member. The rear face is exposed to the atmosphere and has two pair of mirror-symmetrically arranged pressure cylinder bores provided at the respective dead-center locations at opposite sides of a plane passing through the latter. These bores are each adapted to define with an inserted piston an annular gap. Channels connect the annular groove with the rear face and thus with atmospheric pressure. Passages connect the recesses with the respective annular gap.

3,803,985

DEVICES FOR RETAINING THE SLIDING SHOES OF BARREL PUMPS AND MOTORS

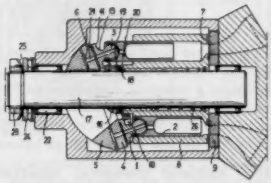
Roger A. Maistrelli, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

Filed June 9, 1971, Ser. No. 151,450

Claims priority, application France, July 7, 1970, 70.25147

Int. Cl. F01b *13/04*

U.S. Cl. 91—488 **2 Claims**



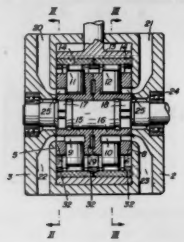
This device for retaining the hydrostatic shoes of oleohydraulic pumps or motors of the barrel-cylinder type comprises a bearing member formed with peripheral recesses which urges said shoes against an inclined plane surface in conjunction with the thrust exerted by a part-spherical washer

responsive to a resilient member prestressed between a bearing face of the driving shaft and the part-spherical washer, the flexion of said resilient member being adjustable in a manner known per se by means of a device for adjusting the operating play between the hydrostatic shoes and the inclined plane surface.

3,803,986
ROTARY RADIAL PISTON TYPE FLUID HANDLING DEVICE

Karl Eickmann, 2420 Isshiki, Kanagawa, Japan

Filed Nov. 26, 1971, Ser. No. 202,516
Int. Cl. F01b *3/04*
U.S. Cl. 91—492 **3 Claims**

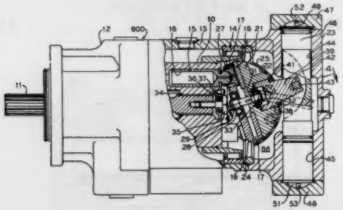


In a rotary radial piston type fluid handling device, such as a pump, motor, transmission, compressor or engine a shaft is provided with a median bearing portion and coupling means on the ends of said bearing portion while at least two rotary members are borne on said median bearing portion of the shaft and are coupled to the shaft by the coupling means thereof, so that the rotary fluid handling radial piston type members can be easily assembled to said shaft and move relatively to the same in axial direction to a limited extent. A further improvement is provided by forming piston shoe seats on the outer portions of the pistons of the device and embracing the same by pivotably connected piston shoes.

3,803,987
SERVOACTUATED HYDRAULIC TRANSDUCER APPARATUS

Kenneth H. Knapp, Hillsdale, Mich., assignor to Abex Corporation, New York, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,503
Int. Cl. F01b *13/04*; **F04b** *49/00*
U.S. Cl. 91—506 **5 Claims**

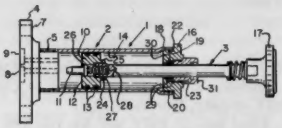


Servoactuated hydraulic transducer apparatus of axial piston type having a rotatable piston barrel mounted within a body, rocker cam defining a swash plate mounted in pivotable fashion within a cam cradle defined within the body, and a plurality of pistons axially mounted within the piston barrel and abutting the swash plate. The pistons are adapted for reciprocation upon rotation of the barrel relative to the swash plate. Two actuators are linked in opposition with the rocker cam to pivot the rocker cam from a position causing maximum fluid displacement of the pistons in a first direction of flow through a position of minimum fluid displacement to a position of maximum fluid displacement in a second and opposite direction of flow. The actuators are respectively connected to receive fluid actuating pressure through a servo selector valve. The valve includes an externally actuated control spool valve means adapted to direct fluid pressure respectively to one actuator or the other. The valve also includes a follower sleeve valve means disposed around the spool valve means and mechanically linked with the rocker cam. The follower valve means is adapted to close off fluid flow through the control valve means when the rocker cam has been pivoted to a position commensurate with a respective position established for the control valve means. The geometry of the mechanical linkage is such that the response of the swash plate to the control spool valve means is essentially linear. The control valve means may be actuated directly or actuated remotely through a hydrostatic electrical control system.

3,803,988
DIESEL FUEL PRIMER PUMP

Thomas M. Orr, Greensburg, Pa., assignor to Ovico, Greensburg, Pa.

Filed Apr. 30, 1973, Ser. No. 355,599
Int. Cl. F16j *15/18*; **F04b** *21/04*
U.S. Cl. 92—85 **8 Claims**

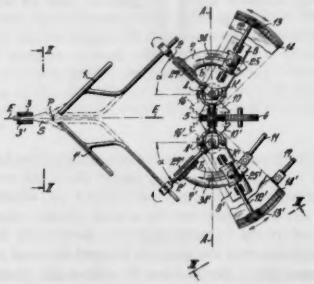


A diesel fuel primer pump includes a piston assembly and cylinder having a filter media for air exhausted from the cylinder and biasing means between the actuating handle for the piston and the cylinder to resist vibration of the primer pump when it is not in operation.

3,803,989
APPARATUS FOR FORMING CROSS-BOTTOM FOLDING IN BAG MANUFACTURE

Gustav Kuckhermann, and Richard Feldkamper, both of Lengerich of Westphalia, Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Dec. 21, 1971, Ser. No. 210,468
Claims priority, application Germany, Dec. 21, 1970, 2062944
Int. Cl. B31b *1/76*
U.S. Cl. 93—28 **21 Claims**



In bag-making machinery, apparatus for forming cross-bottom folding on the ends of open-ended flattened tube sections of bag material fed transversely of the sides of the tube sections, the apparatus comprising two spreaders effective to enter and spread the ends of the tube sections and

synchronously rotatable about respective shafts which are inclined to each other symmetrically with respect to the feeding plane and which are themselves pivotable about respective points disposed symmetrically with respect to the feeding plane, whereby to improve the spreading operation.

3,803,990

CARRIER PACKINGS

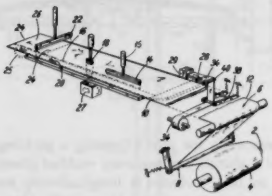
Henning Kristen Pedersen, Markvangen 6, Bredballe, Vejle, Denmark

Filed Mar. 28, 1972, Ser. No. 238,786

Claims priority, application Great Britain, Mar. 31, 1971, 8271/71

Int. Cl. B31d *1/00, 1/86*

U.S. Cl. 93—35 H **1 Claim**



A carrier packing member of the type having a bag portion with a closed top edge above which the sides of the bag portion continues in a top portion provided with a carrier handle, said top portion being provided with a layer of reinforcing material, said bag sides being joined along an upper fold forming said top edge of the top portion, and said reinforcing layer being enclosed inside the top portion between the bag sides. Further, a method of producing such carrier packing members whereby a strip of reinforcing foil material is continuously laid into a folded length of bag sheet material along the closed fold edge thereof, the strip being introduced transversely into the foldes length from the open edge thereof by means of strip guiding means projecting into the folded length from the open edge thereof and ending in an inclined guiding edge about which the strip is folded so as to thereafter extend in the longitudinal direction of the folded length along the closed edge thereof, where after the two sides of the folded length are joined by welding along a longitudinal welding line parallel with and and spaced from the closed folded edge of the sheet length, and handle means are provided in or secured to the sheet length portion between said folded edge and said welding line, whereafter single packing members are consecutively separated from the front end of the length by welding together and cutting the layers of the sheet length along a transverse line.

3,803,991

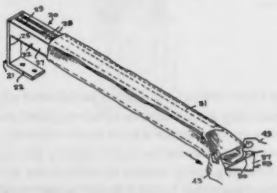
METHOD OF INSERTING LINERS IN BAGS

Harold Leader, Box 325, Helena, Ala.

Division of Ser. No. 255,429, May 22, 1972. This application Mar. 28, 1973, Ser. No. 345,588

Int. Cl. B31b *1/74*

U.S. Cl. 93—35 R **2 Claims**



A method of inserting liners in outer bags, whereby the bags can subsequently be filled with any desired material.

3,803,992

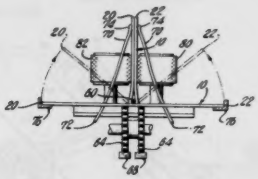
APPARATUS FOR FOLDING AND TAPING BOX BLANKS

William Verwey, Phoenix, Md., assignor to Precision Industries, Inc., Baltimore, Md.

Filed Oct. 19, 1971, Ser. No. 190,565

Int. Cl. B31b *1/60*

U.S. Cl. 93—36.9 **8 Claims**



A method and apparatus are disclosed for producing a carton form from a planar box blank having first and second side edges, a first score line parallel to the side edges and centrally located therebetween, and second and third score lines parallel to the first score line and located on the opposite sides thereof; with the method comprising the step of folding the box blank along the center score line whereby the first and second edges of the blank will lie in juxtaposition with respect to one another; and joining the first and second side edges. The joining is accomplished by first applying a wet adhesive to the outer surfaces of the folded box blank adjacent the side edges thereof and then applying a dry gummed tape thereover.

3,803,993

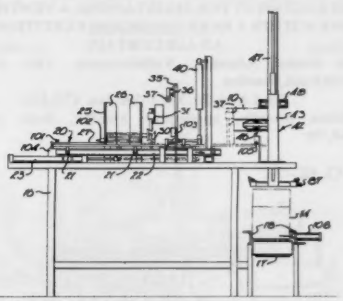
PARTITION INSERTER

Robert H. Graham, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.

Filed Aug. 28, 1972, Ser. No. 284,097

Int. Cl. B31b *11/02*

U.S. Cl. 93—38 **9 Claims**



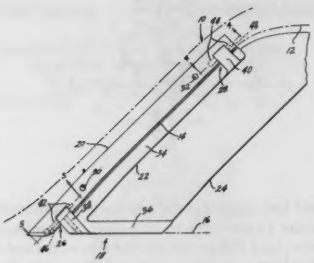
A partition inserter is described for automatically placing partitions, of the type used to separate jars or bottles, into open cases. The apparatus includes a reciprocable stepped horizontal table for moving individual flat folded partitions from a vertical stack to a partition erecting device. Each partition is expanded by the device and, as the table continues to reciprocate, is urged onto horizontally protruding mandrels of a partition inserting means. The mandrels extend into apertures formed by the walls of a partition to grip and support the partition in the erect condition. After receiving a partition, the mandrels are pivoted downwardly and a cylinder is activated to lower the partition into a carton waiting on a horizontal conveyor below. Once the partition is released into the case, the mandrels are lifted and pivoted to the horizontal condition to receive the next successive partition.

3,803,994

AUTOMOBILE WINDOW VENT APPARATUS

Raymond A. McCarroll, 1725 Newcastle, Grosse Pointe Woods, Mich.

Filed Sept. 15, 1972, Ser. No. 289,269
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.12 8 Claims



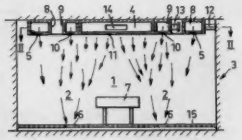
Vent apparatus that is mounted on a vehicle door and extends outboard of the door glass at the forward edge of the window opening. The apparatus includes a die cast ornamental strip that is fitted over and secured to the door frame around the window. A die cast channel member supports a transparent plate, and the channel member is hingedly connected to the ornamental strip adjacent to the upper and lower ends thereof. Adjustable torque devices are incorporated in the hinge connections at the upper and lower ends to retain the transparent plate at a desired angular relation with respect to the door glass. The adjustable torque devices can be set without removal of the vent apparatus from the mounting on the door frame.

3,803,995

ARRANGEMENT FOR MAINTAINING A VENTILATED ZONE WITHIN A PART OF A ROOM PARTITIONED BY AN AIR CURTAIN

Claes Gustaf Allander, Valhallavagen, 129, 115, 31, Stockholm, Sweden

Filed Aug. 26, 1971, Ser. No. 175,198
Claims priority, application Sweden, Sept. 4, 1970, 12068/70
Int. Cl. F24f *13/06*
U.S. Cl. 98—36 3 Claims



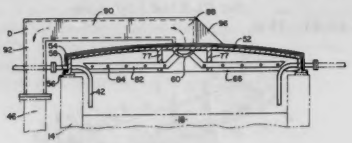
The invention relates to an arrangement for maintaining a ventilated zone within a part of a room, e.g. an operating room, partitioned by an air curtain or screen. In addition to a device for supplying ventilating air inside the partioned part of the room, there are outer air inlets provided in the part of the room outside of the air curtain, said outer inlets being designed to supply air to the room in replacement for the air sucked from outside said curtain into same.

3,803,996

ACID PICKLE TANK COVERS

Robert M. Marshall, Pittsburgh, Pa., assignor to The Ceilcote Company, Berea, Ohio

Continuation-in-part of Ser. No. 865,944, Oct. 13, 1969, Pat. No. 3,648,593. This application Sept. 9, 1971, Ser. No. 179,143The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.
Int. Cl. F23j *11/00*
U.S. Cl. 98—115 R 14 Claims



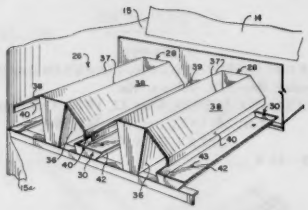
A cover assembly for tanks forming a pickling line or the like includes a plurality of separate molded plastic cover sections; each section includes a longitudinally extending top deck which is generally rectangular in shape. One or more longitudinally extending plenum chambers form an integral part of each cover section and are substantially coextensive therewith. Each plenum chamber includes intake openings facing inwardly into said tank for exhausting vapors released from the pickling line. A single longitudinal plenum chamber preferably is formed along the longitudinal centerline of the tank. When a plurality of longitudinal plenum chambers is employed, preferably one is positioned adjacent each longitudinal edge of the cover section and the remaining plenum chambers are positioned at spaced intervals therebetween. Each cover section preferably also includes a lateral exhaust duct along one lateral edge thereof.

3,803,997

PARTICLE COLLECTING DEVICE

Earl M. Van Raden, Warren, Mich., assignor to Mahon Industrial Corporation, Saginaw, Mich.

Filed Jan. 21, 1972, Ser. No. 219,630
Int. Cl. F23j *11/04*
U.S. Cl. 98—115 SB 11 Claims



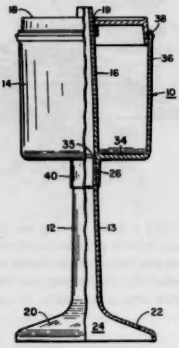
A paint particle collection device positioned adjacent an article spray painting area wherein airborne paint overspray particles are entrapped in water which in overflowing a number of pans and being accelerated by high velocity air creates a series of waterfall filtering spray means to collect the air-borne paint particles. Paint particles caught in the water spray created by the waterfall and the high speed air movement through the spray booth are removed from the exhausted air stream and collect in a receiving tank.

3,803,998

PERCOLATOR PUMP AND BASKET ASSEMBLY

Ray L. Kimber, Jr., West Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed July 13, 1972, Ser. No. 271,605
Int. Cl. A47j *31/00*
U.S. Cl. 99—310 3 Claims



A pump and basket assembly for a coffee maker is formed with a two-part pump having an upper extension portion formed integrally with the basket and a lower base portion which is easily connectable to the upper portion in a snug relationship by means of a snap-lock arrangement.

3,803,999

APPARATUS FOR TREATMENT OF CANNED MATERIAL

David Elford, Kyabram, and Patrick Jones, Griffith, New South Wales, both of Australia, assignors to Kelly & Lewis Pty. Ltd., Springvale, Victoria, Australia

Filed July 10, 1972, Ser. No. 269,988
Int. Cl. A23l *3/02*
U.S. Cl. 99—362 5 Claims

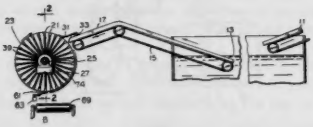
Apparatus for treatment of canned material by passing cans on a conveyor through a treatment zone, the conveyor consisting of two spaced endless chains with elongate members extending therebetween to define can receiving compartments to each face of the conveyor.

3,804,000

INJECTION BLANCHING APPARATUS

William F. Filz, Portland, Oreg., assignor to North Pacific Canners & Packers, Inc., Portland, Oreg.

Division of Ser. No. 83,767, Oct. 26, 1970, Pat. No. 3,707,384.
This application July 13, 1972, Ser. No. 271,243
Int. Cl. A23l *3/34*
U.S. Cl. 99—533 6 Claims



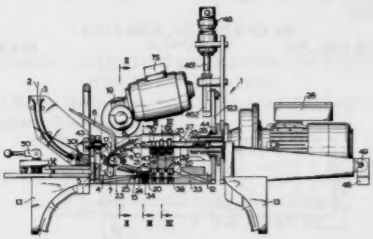
The method of uniformly blanching an ear of corn by blanching the kernels by an exterior operation and independently blanching the pith. A corn ear blanching apparatus having means for blanching the kernels by an exterior operation, and an arrangement for inserting a hollow perforated needle into the pith to inject hot fluid into the pith to independently stop the enzymic activity thereof.

3,804,001

APPARATUS FOR APPLYING BALING BANDS AROUND BALES OF COMPRESSIBLE AND EXPANDABLE MATERIALL

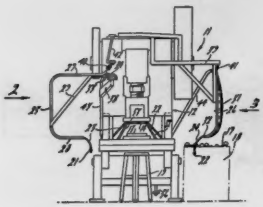
Wilfried Longerich, Schwelm; Heinz Heckmanns, Ennepetal-Buttenberg, and Harald Timmerbeil, Schwelm, all of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Germany

Filed July 6, 1972, Ser. No. 269,313
Claims priority, application Germany, July 7, 1971, 2133714
Int. Cl. B65b *13/24*
U.S. Cl. 100—4 18 Claims



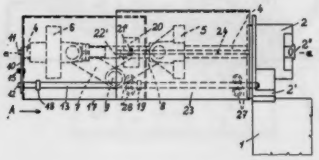
Apparatus and method for applying baling bands around bales of compressible and expandable material in which the band is fed from a band supply in a loop about the bale and in which the leading band end portion is clamped in a position in which it is overlapped by a portion of the band coming from the band supply. The overlapping band portions are formed by die means operated in timed sequence with the band feeding and clamping means with interconnectable cut and bend portions, whereafter the loop is cut off from the remainder of the band and the interconnectable portions are connected to each other by expansion of the bale.

3,804,002
SAFETY GUARD FOR PRESS
Lawrence C. Wingle, Rt. No. 3, Ithaca, Mich.
Filed Feb. 11, 1972, Ser. No. 225,542
Int. Cl. F16p *3/00*; B30b *15/00*; B26d *7/22*
U.S. Cl. 100—53 **10 Claims**



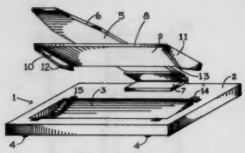
A safety device for a press operator comprising a pair of hand restraints connected to the press ram which insure withdrawal of the operator's hands as the press descends. Cables extend from the hand restraints through guides on opposite sides of the press, around pulleys and through guides at the back of the press to one end of a level connected to the ram. One of the side guides is pivoted on a horizontal axis and the other on a vertical axis, permitting the operator to control and adjust the workpiece. The lever is adjustable to obtain gentle withdrawing motion which will not injure the operator.

3,804,003
COVERED DIE CLOSING UNIT FOR INJECTION MOLDING MACHINES
Karl Hehl, Siedlung 173, Wurtt., Germany
Filed Sept. 8, 1972, Ser. No. 287,244
Claims priority, application Germany, Sept. 15, 1971, 2146042
Int. Cl. B29f *1/00*; B30b *15/04*
U.S. Cl. 100—53 **16 Claims**



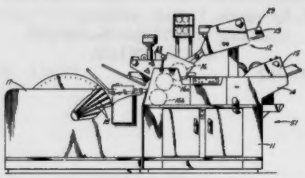
A covered die closing unit for injection molding machines in which the die supports are covered by a die cover and the remaining parts of the unit are covered by an end cover, the two covers being telescopically movable relative to one another along common guide rods. The unit may also include electrical and hydraulic safety interlocks and may further include a pneumatic drive for the opening and closing motions of the covers.

3,804,004
CAN FLATTENING APPARATUS
Robert E. Krebs, 265 Fourth Ave. No. 9, Salt Lake City, Utah, and Eckhard T. Pobuda, 1554 Logan St., Denver, Colo.
Filed Dec. 20, 1971, Ser. No. 209,756
Int. Cl. B30b *9/00*
U.S. Cl. 100—98 **18 Claims**



Apparatus includes a base having an elongated depression formed therein into which a cylindrical can may be laid upon its side. An arm on the base pivots down towards the base and carries a die member for flattening the can body and cutting members to pierce the can body in advance of the die member.

3,804,005
REPROGRAPHY MACHINE CONTROLLED BY INFORMATION ON MASTER
Jack E. Burger, Moreland Hills; Warren B. Howe, and William Kyle, both of Euclid, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Division of Ser. No. 5,035, Jan. 22, 1970, Pat. No. 3,650,204.
This application Sept. 15, 1971, Ser. No. 180,915
Int. Cl. B41f *5/02*
U.S. Cl. 101—2 **15 Claims**

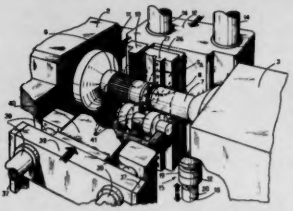


Automatic control of reproduction and sorting of reproduced copies is accomplished in a printing or duplicating machine, a reprography machine, of the type which utilizes masters or originals from which copies are made and which has a hopper, magazine, bunker or chamber for masters, with provision for feeding them in succession to a cylinder associated with inking, duplicating and cleaning mechanisms. Masters are employed which are formed with indicia or coded markings along one or two edges which provide signals for causing a desired number of copies of each successive master to be produced and for sorting the produced copies in a desired manner, for example according to the number of copies to be sent to each of a plurality of different destinations. A scanner is provided for examining the code marks to produce signals, and circuits responsive thereto serve to actuate parts of the duplicating machine. A digital memory device is utilized to store information supplied by the code of one master while reproduction from a previous master is going on.

3,804,006
MACHINE FOR EMBOSSING TYPE-WHEELS OF ROLLERS FOR OFFICE MACHINES

Mario Maquignaz; Bruno Benedetto, and Antonio Lingeri, all of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Torino, Italy

Filed Feb. 3, 1971, Ser. No. 112,357
Claims priority, application Italy, Feb. 5, 1970, 67363/70
Int. Cl. B21b *5/00*
U.S. Cl. 101—5 **5 Claims**

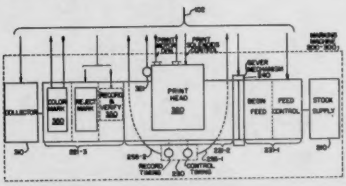


Apparatus for the embossing of type on cylindrically shaped members, e.g., wheels or rollers is described. The die is a flat rectangular member with a surface thereof forming the active surface for embossing characters on to a semifinished wheel or roller. The flat active surface is reciprocated longitudinally of itself and in a direction perpendicular to the axis of the wheel or roller being embossed. In one embodiment the reciprocal motion of the die simultaneously rotates the semifinished wheel, while it is pressed against the latter. In a second embodiment a semifinished roller is pressed between diametrically opposed slides. These slides are caused to reciprocate in a direction perpendicular to the axis of the roller and 180° out of phase with respect to each other. The active surface is on the surface adjacent the roller on one of the slides.

3,804,007
MARKING SYSTEM

Genio R. Arciprete, Lexington; Adrian F. Brokaw, Woburn; Richard L. Dumais, Ashland, and Richard F. Stucchi, Hudson, all of Mass., assignors to Dennison Manufacturing Company, Farmingham, Mass.

Division of Ser. No. 786,813, Dec. 9, 1968, which is a continuation of Ser. No. 681,765, Nov. 9, 1967, abandoned.
This application Feb. 10, 1972, Ser. No. 225,346
Int. Cl. B41l *45/00*
U.S. Cl. 101—66 **4 Claims**



A system for marking both visually interpretable information and non-visually interpretable, but machine readable information on record bearing members, typically control tickets used for merchandise identification, classification and inventory control.

The system employs a marking machine that is capable of being controlled from a remote location in order to specify what is to be marked upon the tickets, as well as such auxiliary information as the number of tickets and the number of parts per ticket. Initially, the specified information is advantageously converted into electrical code signals that act upon the machine and its marking instrumentalities.

As the tickets are fed through the machine, visually interpretable information is imprinted upon each ticket at one marking station and non-visually interpretable, but machine readable information is applied by magnetic recording at another marking station. The recorded information illustratively appears on one side of each ticket, without causing ticket disfiguration; a counterpart of at least a portion of that information is imprinted on the other side of the ticket.

The printing instrumentalities, desirably print wheels, are collectively settable from the remote location. For that purpose the print wheels are driven, upon command, in one direction of rotation to a re-set position. They are subsequently driven in the opposite direction of rotation to individual positions which are specified from the remote location.

In the case of magnetic recording, electrical interference between regular machine operations and the entry of recorded information on the tickets is reduced by the use of a timing mechanism. In addition, a linkage mechanism is used for the precise positioning of tickets and for controllably moving a recording unit into position. The correctness of the recorded information is verified at the remote location, and, upon a failure of verification, a reject marking unit is operated at the machine.

Illustratively, the recording takes place using serial signals applied in circular tracks to a coating of magnetic material on each ticket. Alternatively, the recording signals may be applied in parallel and linearly positioned on the coating of each ticket, despite non-linear feed, by coordinating the timing of the recording with the movement of the tickets.

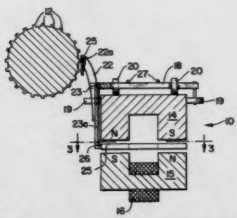
Also disclosed is a unit for applying a color mark to the tickets, as prescribed at the remote location. The completed tickets are received by a collector which is also controllable from the remote location.

Additionally disclosed are various electronic logic networks that are used in the system to facilitate remote control of the machine. One of the networks is a divider which is set with binary code signals from the remote location to specify the number of parts per ticket. Where the number of parts is four or less, the divider takes the form of a gated two-stage register that receives a recurring pulse signal from the machine and produces an output in accordance with the number of parts desired. Another of the networks is a comparator that employs NAND logic for controlling the mechanical position of the color mark unit in accordance with code signals sent from the remote location.

3,804,008
HAMMER ACTUATING MECHANISM AND DRUM DESIGN FOR PRINTERS

Sigurd Hoyer, Huntington, N.Y., assignor to Potter Instrument Company, Plainview, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,476
Int. Cl. B41j *5/00*
U.S. Cl. 101—93 C **9 Claims**



A magnetic field structure for printers has a pair of opposed U-shaped pole pieces arranged to form a parallel pair of ex-

tended gaps in which high flux density exists. In one embodiment of a dot matrix printer, a single, narrow, vertical blade disposed to strike against raised portions of a drum is pivotally mounted on a carriage which rides along one pole piece. A flat, rectangular coil is disposed in the magnet gaps with one end of the coil connected to the hammer blade.

3,804,009

SPRING-DRIVEN PRINTING HAMMER ARRANGEMENT

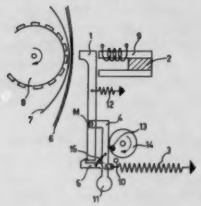
Peter Blume, Norderstedt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1972, Ser. No. 310,174

Claims priority, application Germany, Dec. 3, 1971, 2160032

Int. Cl. B41j *9/30*

U.S. Cl. 101—93 C **4 Claims**



A printing hammer arrangement in which the hammer is under the action of a spring which can be locked and unlocked, in which a rotatable coupling pawl which is provided with an extra mass is arranged between the hammer and the spring.

In the case of a swingable hammer the spring is a helical spring which engages a frame which is rigidly secured to the hammer. In laterally guided hammers, the spring is a leaf-spring which engages a pall pawl which is journalled on the hammer.

3,804,010

MECHANISM FOR ADJUSTING THE INK SUPPLY ZONE IN A TWO DRUM STENCIL DUPLICATOR

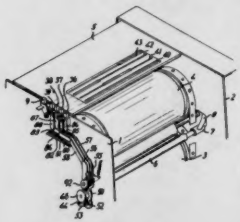
Karl Gustav Zeuthen, Gentofte, and Sven Erik Larsson, Rodovre, both of Denmark, assignors to Zeuthen & Aagaard A/S, Glostrup, Denmark

Filed Mar. 31, 1972, Ser. No. 240,125

Claims priority, application Denmark, Apr. 16, 1971, 1830/71

Int. Cl. B41l *13/08;* **B41f** *31/02*

U.S. Cl. 101—119 **5 Claims**



A two-drum stencil duplicator comprising an adjusting mechanism for positioning an ink zone adjustment member to supply ink in a selected zone in the transverse direction of the stencil. The adjusting mechanism comprises a controllable coupling providing a drive connection between the zone adjustment member and a continuously rotating drive shaft as well as a number of individual operating members equal to the number of selectable ink supply zones for selectively actuating said coupling to interrupt the drive connection when the zone adjustment member reaches the position corresponding to a selected ink supply zone.

3,804,011

ROLLER SQUEEGEE WITH RESILIENT TEETH TO INCREASE LIQUID PENETRATION

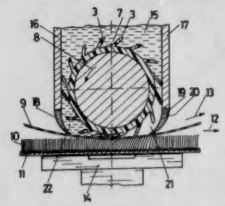
Peter Zimmer, Unter Sparchen 54, 6330 Kufstein, Austria

Filed Mar. 5, 1971, Ser. No. 121,475

Claims priority, application Austria, Mar. 9, 1970, 2164/70; May 15, 1970, 4422/70

Int. Cl. B41f *15/40, 15/44*

U.S. Cl. 101—120 **5 Claims**



A roller squeegee has on the outer peripheral surface thereof teeth made of a material which is elastically deformable under the effect of contact pressure. The teeth extend substantially in the longitudinal direction of the roller squeegee. The centerlines of the cross section of the teeth of the roller squeegee are inclined to the radial direction of the roller squeegee.

3,804,012

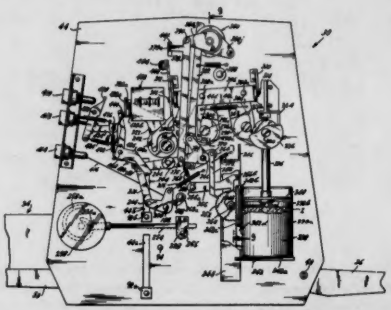
INK SUPPLY WITH MOTION ACCUMULATOR FOR STENCIL DUPLICATOR

William Bosshardt, Armonk, N.Y., assignor to Bohm Benton Inc., Mineola, N.Y.

Division of Ser. No. 873,042, Oct. 31, 1969, Pat. No. 3,652,083. This application Oct. 21, 1971, Ser. No. 191,369

Int. Cl. B41l *13/08;* **B41f** *31/02*

U.S. Cl. 101—122 **5 Claims**



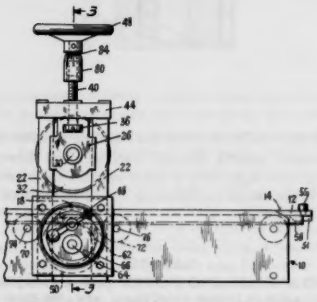
An automatic inking system in a twin cylinder stencil duplicator including a movable ink stand having a disposable sealed ink container mounted thereon and an indexing mechanism operatively connected to the stand for effecting step-by-step movement of the ink container against its cover which acts as a piston. The indexing mechanism is actuated in

response to a predetermined and preset number of revolutions of the main shaft of the machine thereby adjusting the inking rate in accordance with paper type and degree of coverage required.

3,804,013
ETCHING PRESS

Joseph Martin, c/o Martin Engineering Company, Inc. 169-17 N. Blvd., Bayside, N.Y.

Filed July 28, 1972, Ser. No. 276,227
Int. Cl. B41f *3/00, 3/58*
U.S. Cl. 101—250 **2 Claims**



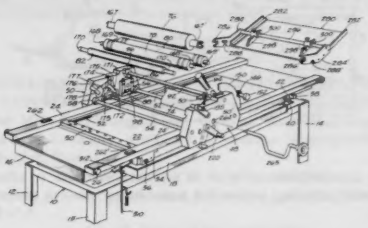
An etching press comprising an upper pressure roller rotatably mounted on a machine frame and a positively driven platen mounted on the frame for reciprocating movement under the pressure roller in a horizontal plane. The platen has a substantially smooth lower bearing surface, and is supported by a lower pressure roller in engagement therewith, disposed directly opposite the upper roller. In addition, first and second supplementary support rollers are disposed below the platen, and engageable with the lower surface thereof at points upstream and downstream respectively of and close to the point thereon engaged by the lower pressure roller. The lower surface of the platen has rack means engageable with drive gearing carried by a shaft rotatably mounted on the frame. The shaft is turnably driven by planetary gearing, power operated by a manually operable crank handle. The upper pressure roller is vertically adjustable for advancing movement downward toward the upper surface of the platen, and can be advanced by vertical screw means on which adjustable stops and cooperable indicator devices are carried. This enables the operator to accurately preset the position of the upper roller to a predetermined point, thus yielding a high degree of impression accuracy and repeatability.

3,804,014
CARD PRINTING MACHINE

Carl G. Thiene, deceased, late of Arcadia, Calif. (by Carol M. Thiene, executrix), and Henry Smith, Canoga Park, Calif., assignors to Reynolds Printasign Company, Pacoima, Calif.

Filed May 30, 1972, Ser. No. 258,186
Int. Cl. B41b *5/08*
U.S. Cl. 101—269 **6 Claims**

A machine particularly adapted for printing card stock. A head or carriage is mounted to reciprocate over a type bed. The carriage mounts the impression roller, inking rollers, doctor roller and an oscillating roller. The impression roller is mounted on an adjustable eccentric shaft adjustable to compensate for different thicknesses of card stock to thereby control the printing pressure. The impression roller is driven through roller members that move on rails which are coupled by way of a positive clutch to the ends of the impression roller which is positively driven in any adjusted position. The inking

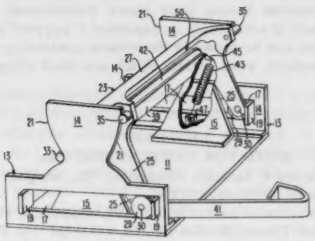


rollers, oscillating and doctor roller are mounted between side plates of the carriage, improved means being provided for lifting the inking rollers and for lifting the oscillating roller and doctor roller.

3,804,015
TOGGLE PLATEN UNIT

Richard H. Colwill, Victor, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 12, 1972, Ser. No. 288,426
Int. Cl. B41f *3/20, 3/58*
U.S. Cl. 101—297 **10 Claims**



A reciprocating platen unit for bidirectional printing having an arcuate work surface with supports extending radially downward therefrom, mounted in a frame by rollers on the bases of the supports reciprocating in horizontal guideways in the frame and cam follower rollers near the outer ends of the work surface interacting with symmetrical curvilinear cam plates forming upper portions of the sides of the frame. The length of travel of the support rollers and cam follower rollers is slightly more than required to rock the platen fully, thus permitting the platen to drop enough at each end of its excursion for work-piece manipulation. A rod secured between the supports and beneath the platen surface riding in a channeled member pivoted to the frame and an over-center spring provide stabilization of the platen.

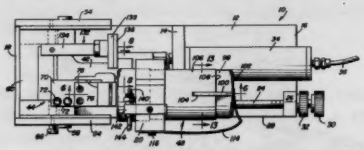
3,804,016
YIELDABLY MOUNTED SEALABLE INK CARTRIDGE AND PRINT HEAD

Alfred A. Marozzi, Upper Montclair, and Joseph Fuzia, Nutley, both of N.J., assignors to Bell-Mark Corporation, Bloomfield, N.J., by said Fuzia

Continuation-in-part of Ser. No. 170,916, Aug. 11, 1971. This application Jan. 17, 1972, Ser. No. 218,334
Int. Cl. B41k *1/42*
U.S. Cl. 101—333 **2 Claims**

An ink saturated pad in a replaceable ink supply cartridge is momentarily exposed through a restricted opening in a cartridge closure element while a surface is being marked by a

print head in a marking position to which it is intermittently displaced. The print head in its rest position contacts the car-



tridge closure element with an adjusted pressure to effect a regulated pumping action for maintaining the ink pad saturated.

3,804,017

METHOD FOR MITIGATING BLAST AND SHOCK TRANSMISSION WITHIN A CONFINED VOLUME

Douglas Venable, Los Alamos; Roger W. Taylor, and Benjamin T. Rogers, both of Embudo, all of N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 30, 1972, Ser. No. 239,762

Int. Cl. F42d *5/00*

U.S. Cl. 102—23 **2 Claims**

The blast and shock wave emanating from an explosive event within a confined volume is substantially reduced when the volume is filled with a low-density, particulate, energy absorbing medium having poor shock transmission characteristics such as vermiculite or expanded ("popped") perlite. If a vacuum can be drawn in the volume containing the particulate medium, even greater shock and blast mitigation is achieved.

3,804,018

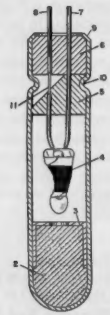
INITIATOR AND BLASTING CAP

Florian Bernard Janoski, Allentown, Pa., assignor to ICI America Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 43,342, June 4, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 298,155

Int. Cl. F42b *3/18*

U.S. Cl. 102—28 M **8 Claims**



An electric initiator and blasting cap exhibiting increased protection against activation by discharges or extraneous static electricity and by electromagnetic radiation in the radio frequency spectrum. The initiator contains an inductor, such as a coil, in series relationship and adjacent to its ignition means and may have alternative current path elements preferentially located to guard the bridgewire element.

3,804,019

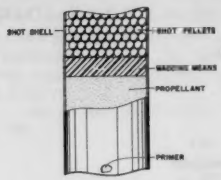
SHOT SHELL AND IMPROVED WADDING THEREFOR

Eldon Kenneth Hurley, Kenvil, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 4, 1972, Ser. No. 295,053

Int. Cl. F42b *7/08*

U.S. Cl. 102—42 R **10 Claims**



Loaded shot shells, in which the wadding member is formed from a water soluble plastic material, and hence, when discharged from a gun into a water-containing environment it dissolves in the water to eliminate its presence as an environmental pollutant.

3,804,020

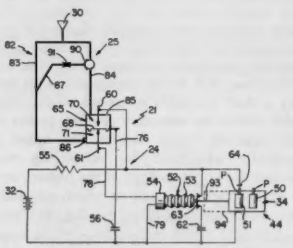
SAFING AND ARMING SYSTEM FOR A PROJECTILE FUZE AND FLUIDIC CONTROL MEANS FOR USE THEREWITH

David C. Norton, Richmond, Ind., assignor to AVCO Corporation, Richmond, Ind.

Filed Apr. 17, 1973, Ser. No. 351,869

Int. Cl. F42c *5/00*

U.S. Cl. 102—81 **20 Claims**



A safing and arming system for a projectile fuze comprises an apparatus for readying a detonator of the fuze for firing upon impact thereof and fluidic control means for the apparatus. During ascent of the projectile and its fuze through its trajectory toward the summit thereof, the control means operates to actuate a first component which makes available an energy source which is required to detonate the detonator, and after the projectile and fuze pass through the summit the fluidic control means operates to actuate another component of the apparatus which moves the detonator into position to be detonated upon impact whereby the projectile and fuze are a considerable distance from their associated launch site before the detonator is in position to be detonated to thereby assure maximum safety for the launch crew.

3,804,021

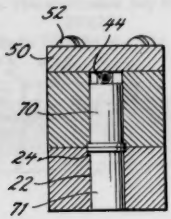
DEVICE FOR FIRING MULTIPLE CARTRIDGES IN A TIME SEQUENCE

Robert McGirr, R.D. 1 Box 272, Orwigsburg, Pa.

Filed Jan. 19, 1972, Ser. No. 219,063

Int. Cl. F42b *3/02*

U.S. Cl. 102—70 R **1 Claim**



For the purpose of firing a strip or sequence of cartridges and shells at timed intervals, as in an alarm, attention getting device, anti-riot device or means to produce a large amount of dispersed fire power, cartridges and shells, either blanks or fully loaded ammunition, in side by side relation in a housing, are disposed with a pyrotechnic delay cord or mild detonating fuse running from cartridge to cartridge across the percussion cap end. In one variation there is interposed between the initiator such as the pyrotechnic delay cord, a booster charge which in turn sets off the percussion cap. In another variation an initiator such as a pyrotechnic delay cord or mild detonating fuse runs across the open ends of the cartridges, which are loaded with a pyrotechnic or other suitable delay charge, each of the cartridges when its percussion cap fires being back to back with another cartridge, and having a suitable explosive charge or other pyrotechnic charge.

3,804,022

ELECTROMAGNETIC SUSPENSION AND GUIDE SYSTEM FOR MAGNETICALLY SUSPENDED VEHICLES

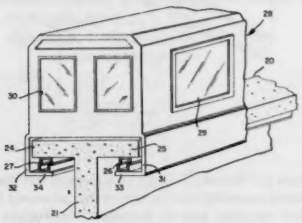
Peter Schwarzler, Furstenfeldbruck; Gerhard Bohn, and Helmut Schauberger, both of Munich, all of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munchen, Germany

Filed June 30, 1972, Ser. No. 268,132

Claims priority, application Germany, July 9, 1971, 2134424

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 MS **10 Claims**



A vehicle displaceable along a track is suspended by at least one electromagnetic suspension and guide system comprising a generally U-section armature fixedly mounted along the track and having downwardly extending flanges. The vehicle is provided with a plurality of magnetic cores and respective electromagnet coils axially spaced in the direction of vehicle travel and in the longitudinal direction of the track with the cores being staggered to one side and the other alternately in the longitudinal direction. The cores are likewise of U-section and have flanges with a spacing equal to that of the flanges of the armature. When staggered as specified, the flanges of one core set lie to one side of vertical planes through the armature flanges while the next core set has its flanges lying to the other side of these planes.

3,804,023

DYNAMIC-MAGNETIC SUSPENSION SYSTEM FOR A CONVEYANCE BOUND TO A GUIDE STRUCTURE

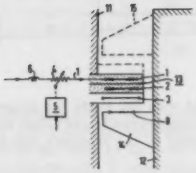
Ernst Massar, Erlangen, and Gunther Bogner, Tennenlohe, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 28, 1972, Ser. No. 248,385

Claims priority, application Germany, Apr. 30, 1971, P 21 21 247.5

Int. Cl. B61b *13/08*; **H01f** *7/00*

U.S. Cl. 104—148 SS **18 Claims**



A dynamic-magnetic suspension system for a conveyance bound to a guide structure is disclosed. The system includes a superconductive excitation winding disposed on the conveyance for generating a magnetic field. A plurality of conductor loops are disposed in the guide structure to interact with the magnetic field for suspending and guiding the conveyance with respect to the guide structure. The conductor loops are arranged as a multiphase winding extending in the direction of motion of the conveyance. The excitation winding induces a substantially sinusoidal voltage in the conductor loops which travels at the speed and in the direction of motion of the conveyance.

3,804,024

METHOD AND APPARATUS FOR THE DYNAMIC UNCOUPLING OF A RAIL-GUIDED VEHICLE FROM ITS GUIDING RAIL MEANS

Eveline Gottzein, Oberpframmern, and Norbert Klamka, Heufeld, both of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed May 3, 1972, Ser. No. 250,022

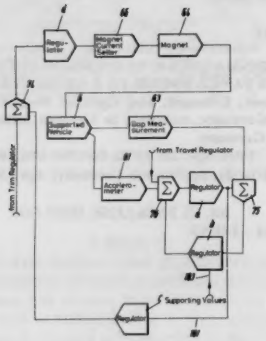
Claims priority, application Germany, June 1, 1971, P 21 27 047.3

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 MS **12 Claims**

The dynamic uncoupling is effected by means of control circuits including measuring elements determining the instantaneously detectable distance between the guide means of the vehicle and its guiding rail means, and also determining the vertical and horizontal accelerations of the vehicle relative to the guiding rail means. The acceleration signals are supplied to a control circuit to form a directrix for the vehicle travel path, and the distance determination signals are superposed on the acceleration signals in the control circuit to cause the directrix to maintain a preselected mean position relative to the guiding rail means. The directrix is utilized to supply signals, through another control circuit, to the vehicle guide means to maintain the center of gravity of the vehicle at a con-

stant distance from the directrix. A regulator cascade of three self-contained control circuits is utilized in combination with a coupling matrix to control the energization of guiding magnets



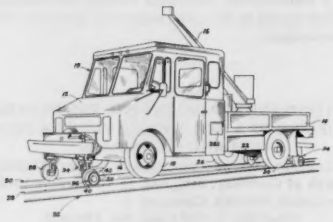
operatively associated with the guide rail means. Additional parameters, representing desired travel values and the like for the vehicle, are supplied to the regulator cascade through a trimming regulator.

3,804,025

CONVERTIBLE RAIL-HIGHWAY VEHICLE

James O. Elliott, Bois D'Ark, Mo., assignor to Auto Crane Company, Tulsa, Okla.

Filed May 22, 1972, Ser. No. 255,402
Int. Cl. B61d *15/00;* **B61f** *9/00;* **B62d** *61/12*
U.S. Cl. 105—215 C **11 Claims**



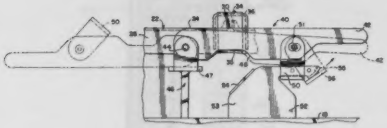
A retractable steel guide wheel assembly adaptable for installation on a pneumatic tired vehicle for transforming the vehicle into a convertible rail-highway vehicle. The guide wheel system is driven from the vehicle suspension system and provides a four corner structure wherein each corner is supported in a substantially identical manner. In the extended or supporting position for the steel wheels, the front wheels of the vehicle are elevated from engagement with the rails, and the rear wheels are maintained in engagement with the rails in a manner wherein the optimum force or weight is maintained on the rear wheels to provide optimum traction for driving and for braking vehicle during travel thereof along the rails. The wheels are retracted in a manner similar to the retractable wheels of an aircraft, but in an opposite direction of movement with respect thereto.

3,804,026

TROUGH HATCH LOCKING DEVICE

George S. McNally, South Holland, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Aug. 10, 1972, Ser. No. 279,588
Int. Cl. B61d *39/00*
U.S. Cl. 105—377 **4 Claims**



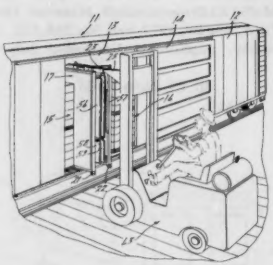
A trough hatch cover locking strap is positioned to overlap the adjacent end portions of two trough hatch covers and the strap includes a free end which is locked in the latched position by a locking bar having a pivoting locking shackle engageable with a roof mounted locking hook thereby maintaining the locking bar in the locked down position.

3,804,027

FREIGHT BRACING METHOD AND REMOVABLE AIR BULKHEAD THEREFOR

Harvey W. Chapman, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.

Filed Feb. 28, 1972, Ser. No. 229,634
Int. Cl. B60p *7/14;* **B61d** *45/00*
U.S. Cl. 105—369 BA **9 Claims**



A system for bracing freight in a railway car embodying an air bulkhead assembly that is removable as a unit from the car and which may be placed between the freight in the car through the doorway opening for bracing the freight during transit. The air bulkhead assembly includes a pair of substantially rigid panels each of which is adapted to engage a face of the freight. Inflatable air bags are positioned between the panels for altering the spacing between the panels and for cushioning impact loading upon the freight. A linkage system is provided for maintaining the panels supported from an elongated tubular member that extends across the top of the bulkhead assembly and facilitates its handling by means of a fork truck or the like.

3,804,028

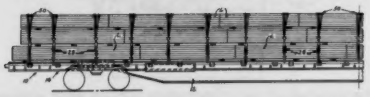
APPARATUS FOR SECURING LADING ON RAILWAY FLAT CARS

Walter E. O'Leary, Creve Coeur; Duane V. Thornton; James C. Hammonds, both of St. Charles, and Roy R. Dare, O'Fallon, all of Mo., assignors to ACF Industries Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 80,284, Oct. 13, 1970, Pat. No. 3,678,866. This application July 19, 1972, Ser. No. 273,231

Int. Cl. B60p *7/08*; **B61d** *45/00*; **B65j** *1/22*

U.S. Cl. 105—369 A **28 Claims**



A tie-down system for carrying loads, such as lumber, on the deck of a railroad car is disclosed having resiliently anchored banding providing tie-downs to secure the loads onto the deck so that a minimum travel or shifting of the loads longitudinally along the deck is obtained when the loads settle and impact forces are exerted against the car. The banding is arranged in an endless double loop over the load with the free ends of the bands positioned over the upper surface of the load for tensioning and securement. The double loop permits the banding to slip longitudinally about its anchor points thereby to provide a mechanical advantage and permitting a relatively high initial tensioning to be obtained with conventional tensioning equipment without the use of power tools. Various means are employed to reduce any pretensioning in the banding upon removal of the banding and unloading the flat car. The tie-down assembly is further designed to reduce or substantially eliminate lateral movement of the lading.

The tie-down assembly comprises a resilient means for pretensioning the banding, a means for receiving the banding preferably designed to avoid stress concentrations in the banding passing therethrough, and means for providing at least some rotational movement of the tie-down assembly about its own generally vertical axis at least about 20°. Means may be provided on the car for storing the tie-down assembly when not in use. And the tie-down assembly may include means for mounting the same on the car in such a manner that upon removal of the banding therefrom, the assembly automatically assumes a stored position on the car.

3,804,029

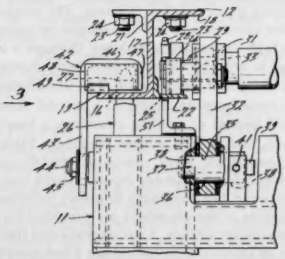
BULKHEAD SUSPENSION SYSTEM EMBODYING SAFETY HANGER

Gerald H. Williams, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.

Filed Sept. 1, 1971, Ser. No. 176,976

Int. Cl. B60p *7/14*

U.S. Cl. 105—376 **1 Claim**



A freight bracing bulkhead assembly for use in railroad cars or the like. The bulkhead assembly includes an overhead trolley arrangement for supporting the bulkhead for movement along the railroad car to preselected bracing positions. The tracks on which the bulkhead assembly is supported have the shape of an inverted T section and one leg of the T has openings that are adapted to receive locking pins movably carried at the upper corners of the bulkhead. An arrangement is carried by the bulkhead that overlies the track to prevent falling of the bulkhead should the trolley arrangement become disengaged from the track and for protecting the locking pins.

3,804,030

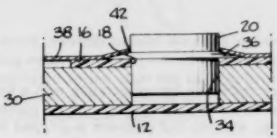
PALETTE

Alfred Israel, 425 Beach 120th, Rockaway Park, N.Y. 11694

Division of Ser. No. 266,064, June 26, 1972, Pat. No. 3,732,972. This application May 9, 1973, Ser. No. 358,800

Int. Cl. B65b *11/00*; **B44d** *3/02*; **B65d** *65/02*

U.S. Cl. 108—43 **9 Claims**



A palette comprising a flat base preferably integral with a peripheral wall, with a portion of the wall preferably extending over a portion of the base to form an overhang in spaced, parallel relationship thereto. A water retentive pad is disposed across the base and beneath the overhang. A plurality of pigment containers are seated in the overhang and fit into openings in the pad. A water-permeable sheet overlies the pad and overhang, surrounding the pigment containers, and providing an area on which selected pigments may be placed and mixed.

3,804,031

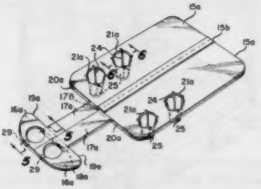
AUTOMOBILE TRAY

Francis Watson Pitts, Box A, Lydia, S.C.

Filed Oct. 11, 1972, Ser. No. 296,645

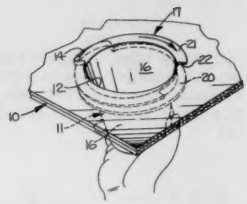
Int. Cl. A47b *23/00*, *46/00*; **A47g** *23/02*

U.S. Cl. 108—44 **8 Claims**



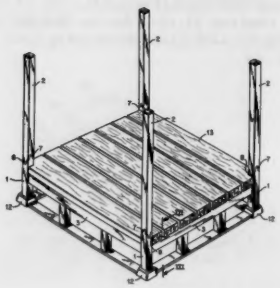
A refreshment holder tray for automobiles having a pair of front seat backs separated by a gap, and an arm rest in registry with the gap. The tray is constituted of a front section which seats on the arm rest, a rear section that extends between the backs of the front seats and the rear seat on which it rests, and a narrow neck section which extends through the gap between the front seat backs and connects the front and rear sections of the tray. Apertures for receiving and holding conventional containers of liquid, such as coffee, etc., are provided through the tray body in its front and rear sections, and platforms for seating the bottoms of containers are suspended from the tray beneath certain of the apertures. The means for suspending the platforms is detachable and also adjustable to maintain the platforms in selective horizontal positions when the tray is in service. In one form of the invention, the tray is constituted of subsections hingedly connected for folding in a compact package.

3,804,032
PALLET AND PALLET LEG
Larry H. Baucom, Lawyer's Rd., Mint Hill, N.C.
Filed Oct. 2, 1972, Ser. No. 293,933
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 8 Claims



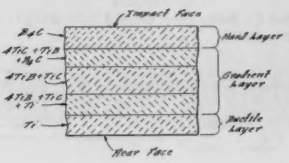
A manually insertable leg for cooperating with a load platform and a pallet formed by assembling the load platform and a plurality of legs, wherein the platform is gripped between flanges on the leg in such a manner as to facilitate ready assembly of the pallet at a location of use and as to preclude undesirable disassembly of the pallet during use.

3,804,033
PALLET WITH FOLDING CORNER POSTS
Michizo Izawa, Tokyo, and Takeo Izawa, Kanagawa-ken, both of Japan, assignors to G. R. P. Company, Ltd., Tokyo, Japan
Filed June 12, 1972, Ser. No. 262,148
Claims priority, application Japan, June 16, 1971, 46-43147
Int. Cl. B65d *19/44*
U.S. Cl. 108—55 3 Claims



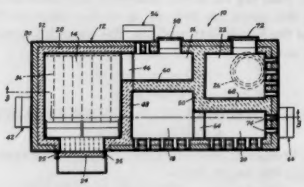
The four upright posts which project from the corners of a pallet platform each have a tubular base portion fixed to the platform and a top portion of the same tubular material. In the operative position of the post, longitudinally tapering recesses and projections of the two portions conformingly engage each other, and the bore of the top portion is conformingly engaged by a core fixed to the base portion and projecting from the bore of the same. A transverse pin between two projections of the top portion is received in a longitudinal guide slot of the core, thereby permitting the top portion to be lifted longitudinally from its operative position to an intermediate position in which the projections and recesses are disengaged, and thereafter to be folded toward the platform for compact storage of the pallet or outward to facilitate loading and unloading.

3,804,034
ARMOR
Jacob J. Stiglich, Jr., Traverse City, Mich., assignor to Boride Products, Inc., Troy, Mich.
Filed May 9, 1972, Ser. No. 251,747
Int. Cl. F41h *5/04*
U.S. Cl. 109—80 9 Claims



An improved armor having a hard layer comprised predominantly of boron carbide, defining a projectile impact face, and a ductile layer comprised predominantly of metallic titanium, defining a rear face, and a gradient layer having a controlled gradient of hardness and ductility interposed between said hard layer and said ductile layer and comprised of a ceramic alloy of TiB and TiC as discrete phases defining a matrix through which controlled amounts of particulated boron carbide and/or titanium are dispersed.

3,804,035
INCINERATOR
Nathaniel I. Gunn, Springfield, Mo., assignor to Federal Enterprises Inc., Springfield, Mo.
Filed Aug. 3, 1972, Ser. No. 277,784
Int. Cl. A47k *11/02*
U.S. Cl. 110—8 A 6 Claims



An industrial and commercial incinerator designed for easy waste charging and quick residue removal. The incinerator is comprised of five chambers to provide maximum incineration coupled with a high degree of turbulence through a tortuous path and change in velocity to insure maximum deposition of solid residues to minimize air pollution. The five chambers are comprised of a main burning chamber, a second combustion chamber, a third uppass or settling chamber, a fourth combustion chamber, and a fifth uppass chamber. Flame ports utilizing checkered brick work minimize stratification and enhance turbulence for maximum mixing. Right angle turns are provided between the chambers to effect turbulence and different dimensions of the chambers are provided for change of velocity to maximum settling. Curtain walls and flame ports are provided at different elevations which when coupled with the change of direction between the chambers provides the tortuous path. Afterburners may be employed in the second and fourth combustion chambers for maximum combustion.

3,804,036

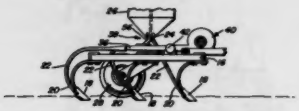
AIR INDUCTION APPARATUS FOR SEED DRILL TUBE

Edwin A. Seifert, Jr., Rt. 1, Box 22, Belgrade, Mont.

Filed Oct. 5, 1972, Ser. No. 295,188

Int. Cl. A01c 7/20

U.S. Cl. 111—1 6 Claims



A venturi zone producing structure for the delivery tube of a seed drill or material metering apparatus and for drawing air through the delivery tube on the upstream side of the venturi zone to assist in propelling the seed or other granular material from the associated fertilizer seed box to the venturi zone and for blowing the seed or granular material from the venturi zone to the discharge end of the delivery tube.

3,804,037

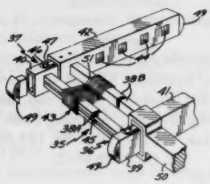
RUG MAKER

Myrtle B. McHale, 10662 Amber Cir., Garden Grove, Calif.

Filed June 5, 1972, Ser. No. 259,878

Int. Cl. D05b 23/00

U.S. Cl. 112—9 13 Claims



The present invention relates to a rug making device, and more particularly relates to a rug making device for making fluff rugs having selectable pile depth, having a sculptured texture, having fringed borders, and the like. The disclosed rug making device is such that it may be quickly and easily adjusted to produce yarn strands of selectable length for the above purposes; several embodiments of the adjustable rug making device being disclosed.

3,804,038

SEWING MACHINE BRAKING MECHANISM

August Martin, Morbach, and Ernst Albrecht, Hochspeyer, both of Germany, assignors to Firma Pfaff Industriemaschinen GmbH

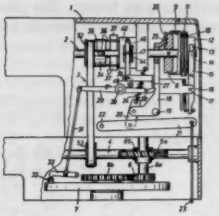
Filed June 18, 1973, Ser. No. 370,720

Claims priority, application Germany, June 27, 1972, 2231482

Int. Cl. D05b 69/20, 69/22

U.S. Cl. 112—67 5 Claims

A sewing machine comprises a main drive shaft which is driven through a clutch mechanism which includes a clutch disc having a stopping groove. The groove is engageable by a locking member of an operating lever. A centrifugal braking mechanism includes a weighted brake member which is supported around the shaft on a spring which biases the brake member to engage a fixed abutment of the housing surrounding the shaft. The brake member is held during rotation of the shaft by a holding collar which engages an outward extension of the brake member under the force of a biasing coil spring. The operating lever is held by a locking lever which may be released under the action of a control cam to permit displacement of the locking member out of the locking groove after the speed of the main shaft drops below a certain value. When the shaft does return below a predetermined speed, the



weights move inwardly toward the shaft and they engage with the holding collar which is returned to an engagement position by its associated spring after the locking lever is moved to a position permitting the operating lever to move out of engagement with the clutch disc stop groove.

3,804,039

SEWING MACHINE ATTACHMENTS

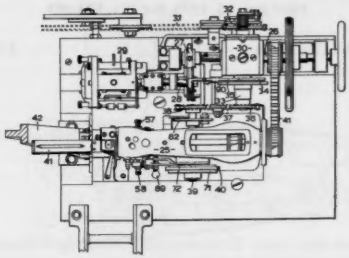
William Leslie Simpson, Birmingham, England, assignor to Newey Goodman Limited, Birmingham, England

Filed Dec. 27, 1972, Ser. No. 319,058

Claims priority, application Great Britain, Dec. 31, 1971, 60971/71

Int. Cl. D05b 3/18

U.S. Cl. 112—105 8 Claims



In or for a sewing machine there is a device for assisting the sewing of hooks to tapes or other articles. The hooks are of the kind comprising a length of wire bent to form an open-work base and a bill extending upwards from one side of the base and over part of the base. The device comprises means for supplying hooks sequentially to a hook supply station, and means for engaging the bill of a hook disposed at that station, moving it from the station to a sewing station where the sewing machine can at least start to sew the base to the article, releasing the hook and returning to the hook supply station for a further hook.

3,804,040

REPAIR MODE FOR POCKET SETTER MACHINES

Bruce E. Arnold, Clinton, N.J., assignor to The Singer Company, New York, N.Y.

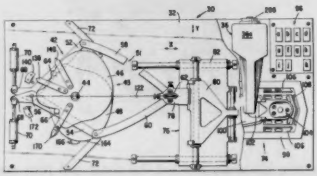
Filed Apr. 9, 1973, Ser. No. 349,149

Int. Cl. D05b 21/00

U.S. Cl. 112—121.15 9 Claims

A repair mode for a pocket setter machine which combines the coaction of a synchronized pattern sewn at a sewing

machine having a thread-break detector and a counter. The pocket setter machine includes a pocket clamp driven by the cam assembly. The sewing machine is synchronized to the cam assembly whereby the stitches will always be in the same needle holes for a given pocket piece pattern. The thread-break detector is a rotary motion sensing wheel which signals when the thread is broken by ceasing to turn. The counter is armed by the operator pressing a suitable button on a control panel.



This causes the pattern to be traced about the pocket to just before the break, at which point the sewing machine will resume sewing the pocket to completion. Since the same needle holes are used in both sewing and repair mode the few stitches that are overlapped or sewn twice just before the break will be substantially undetectable by an untrained eye. Rethreading of the sewing machine needle could be done at the point of breakage, or at any point before resewing by the operator pressing the stop button.

3,804,041

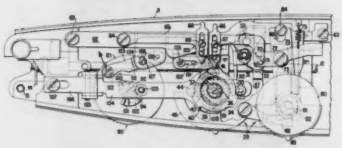
PATTERN CAM EJECTOR MECHANISM

Lionel J. Coulombe, Matawan, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 16, 1973, Ser. No. 324,009

Int. Cl. D05b *3/02*

U.S. Cl. 112—158 A **4 Claims**



A pattern cam ejecting mechanism is disclosed associated with a cam follower retracting device. The mechanism is organized so as to be stable in the cam ejected position with the cam followers maintained retracted thus freeing the operators hands for cam manipulation. The pressure incident to insertion of a selected cam on to the cam seat automatically shifts the mechanism out of the stable cam ejected position and returns the cam followers into cam tracking relationship.

3,804,042

SEWING MACHINE WITH IMPROVED BASTING STITCH MECHANISM

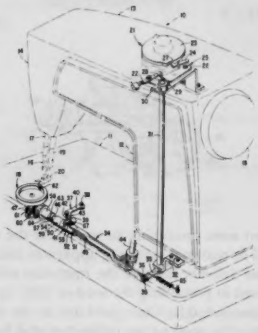
Roger J. Ross, St. Jean, Quebec, Canada, assignor to The Singer Company, New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,328

Int. Cl. D05b *57/36*

U.S. Cl. 112—181 **12 Claims**

A sewing machine in which a simplified basting stitch mechanism is incorporated. A circular moving loop taker is cooperable with the needle in the production of stitches. Intelligence record means are movable supported on the frame of the machine drivable by the rotary mainshaft of the machine. The intelligence record means are operatively connected with



the said loop taker so as to effect a preselected modification of the effective circular movement threof with respect to said needle to thus prevent the formation of stitches.

3,804,043

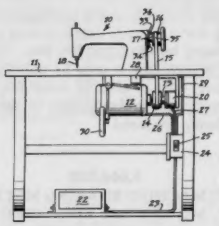
NEEDLE POSITIONER FOR A SEWING MACHINE

Robert W. Benson, Nashville; Samuel H. Pearsall, Donelson, and Robert G. Reed, Nashville, all of Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed Jan. 20, 1971, Ser. No. 107,895

Int. Cl. D05b *69/22*

U.S. Cl. 112—219 A **4 Claims**



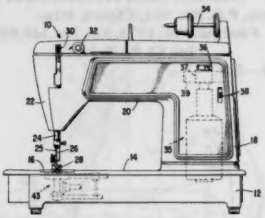
A needle positioner for a sewing machine having an electric motor, including electrical circuitry for driving the electric motor at a uniform low speed and at variable speeds greater than the low speed, a dynamic braking circuit connected to the motor and adapted to be energized when the motor is de-energized to reduce the speed of the motor, automatic electric controls for de-energizing the dynamic braking circuit and re-energizing the motor when the speed of the motor has decreased to the low speed, a switch element responsive to the up or down position of the needle and adapted to energize controls for simultaneously de-energizing the motor and actuating braking means to stop the motor when the needle is in the desired up or down position.

3,804,044

SEWING MACHINE HANDWHEEL ELIMINATION ARRANGEMENT

Lawrence R. Goetz, Convent Station, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,578
Int. Cl. D05b 69/18
U.S. Cl. 112—220 3 Claims



A sewing machine is provided with means whereby the mechanisms thereof can be selectively operated in a normally forward direction or in a reverse direction such that the conventional handwheel on the sewing machine can be eliminated.

3,804,045

PROCESS FOR PRODUCING MOLYBDENUM CUP WARES HAVING THIN INTERNALLY TAPERED SIDEWALLS

Neill K. Banks, Jr., Gloucester, Mass., assignor to Bomco, Incorporated, Gloucester, Mass.

Continuation-in-part of Ser. No. 858,681, Sept. 17, 1969, Pat. No. 3,685,475. This application Aug. 21, 1972, Ser. No. 282,152. The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.
Int. Cl. B21d 51/00
U.S. Cl. 113—120 H 7 Claims

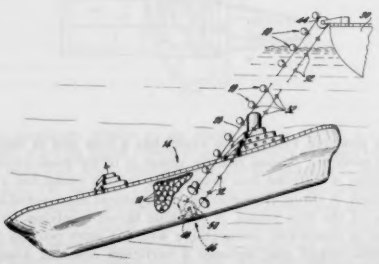
Thin walled molybdenum cups having internally tapered sidewalls are formed by a particular metal spinning process, stress relieved and trimmed to finished length. The stress relieving step serves to mitigate strongly against deleterious lamination of the cups upon trimming thereof to their finished lengths.

3,804,046

APPARATUS FOR RAISING SUNKEN VESSELS

Jean J. Kruger, Northport, and Vincent E. Rossitto, West Islip, both of N.Y., assignors to Vincent E. Rossitto, West Islip, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,701
Int. Cl. B63c 7/12
U.S. Cl. 114—50 6 Claims



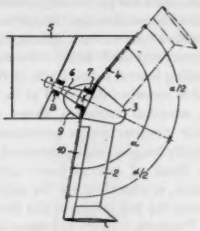
Apparatus for raising sunken vessels. The apparatus includes buoyant spheres comprised of an outer fiberglass shell, an inner rigid polyurethane foam core and a rod embedded within the core. One end of the rod extends outward from the core and forms an eye bolt. Tee apparatus further includes a cable which contains a plurality of pivoting eye hooks and means for moving the cable in a closed loop. Tee eye bolt of each buoyant object is attached to a respective eye hook and is carried by the cable down into a hold of the vessel. The cable comes in contact with a drum assembly placed within the hold of the vessel and the eye hook has a portion which extends through the cable and contacts the drum so as to force the eye hook to pivot and release the buoyant object within the hold of the vessel. As the objects are released within the hold of the vessel they rise to the top of the holds and when sufficient numbers accumulate within the hold it creates the required amount of buoyance necessary to raise the ship to the surface of a body of water.

3,804,047

RETRACTION ARRANGEMENT FOR THE BOW FOIL OF HYDROFOIL CRAFT

Egon Faber; Ernst Jaksch, both of Luzern, and Karl-Heinz Stark, Littau, all of Switzerland, assignors to Supramar AG, Luzern, Switzerland

Filed Nov. 13, 1972, Ser. No. 306,176
Claims priority, application Switzerland, Nov. 18, 1971, 16799/71
Int. Cl. B63b 1/30
U.S. Cl. 114—66.5 H 4 Claims



A hydrofoil retraction arrangement for water craft having a hull, comprising in combination a bow foil system, composed of a foil and at least one strut placed in front of the stem of the hull. Each strut is fastened to a streamlined bulb-like body protruding beyond the lower stem portion, said body being rotatable transversally through 180° about a rotary axis which is parallel to the longitudinal plane of symmetry of the craft and which forms approximately the bisector of the angle between the stem and the trailing edge of the strut, and the bow having a fixed transition body which leads the lines of the rotatable body into those of the hull.

3,804,048

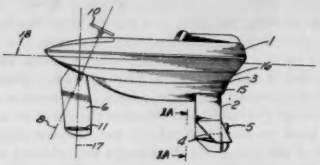
HYDROFOIL WATERCRAFT

David J. Cline, Brea, Calif., assignor to Dynafoil, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 235,517, March 17, 1972, abandoned. This application Mar. 15, 1973, Ser. No. 341,682
Int. Cl. B63b 1/26
U.S. Cl. 114—66.5 H 17 Claims

A hydrofoil watercraft utilizing forward and rearward struts and foils configured and oriented to provide lateral stability.

The forward strut is freely rotatable about its longitudinal axis and mounts the forward foils. The strut and foils are configured and oriented such that the resultant of the lift, pressure, and drag forces therein tends to stabilize the watercraft in a turn and generate righting forces.



3,804,049

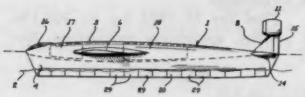
WAVE FORCE ABSORBING DEVICE

Richard R. Greer, 6125 E. Indian School Rd., Scottsdale, Ariz.

Filed Feb. 12, 1973, Ser. No. 331,848

Int. Cl. B63b *3/20, 5/00*

U.S. Cl. 114—67 A **10 Claims**



Apparatus is disclosed for protecting lateral sides of waterborne vessels against wave damage. In particular, the present invention is directed to vessels generating lift through aerodynamic interactions and which vessels may employ a plurality of depending lateral sides. Each of the lateral side includes a deformable member disposed at its lower extremity. The deformable member includes three selectively pressurized deformable compartments positioned adjacent one another and generally longitudinally oriented with respect to a lateral side. The force of lateral wave action, striking the deformable member, is absorbed by the deformable member without transmitting the full effect of the force to the respective lateral sides. Pressure sensors are associated with each of the compartments and provide an indication of the magnitude of the striking wave force, which magnitude is a factor in establishing the maximum safe speed of the vessel.

3,804,050

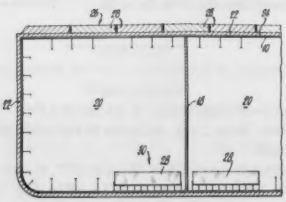
PERMANENT BALLAST ARRANGEMENT FOR EXTERNALLY INSULATED TANKERS

Frank J. Iarossi, Middletown, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Oct. 21, 1971, Ser. No. 191,406

Int. Cl. B63b *25/12*

U.S. Cl. 114—74 A **12 Claims**



A permanent ballast arrangement for an externally insulated tanker wherein the ballast comprises a solid material of high specific weight such as concrete, distributed throughout the midbody of the vessel. The concrete ballast may comprise preformed slabs having the proper size and shape, and disposed externally across the main deck of the vessel, as well as internally above the bottom structure of the vessel. A key-keyway construction is employed to secure the slabs in place.

3,804,051

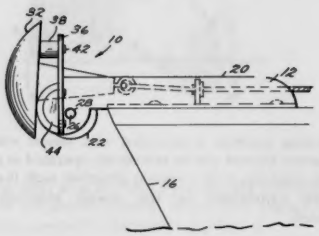
ANCHOR ADAPTER BRACKET

Don S. Norton, P.O. Box 902, Clinton, Miss.

Filed June 14, 1973, Ser. No. 369,980

Int. Cl. B63b *21/22*

U.S. Cl. 114—210 **10 Claims**



The disclosure is directed to an improved anchor bracket for mounting on a boat and for use in combination with an anchor, preferably an anchor having a "mushroom" shape. The bracket is provided with a pair of anchor support surfaces and a pair of resilient pads that maintain the anchor, when raised, in a substantially horizontal position. Each anchor support surface is disposed at one side of an anchor line pulley and has an outwardly facing chamfered edge that is effective to prevent the anchor line from being cut as the anchor is weighed, especially from a position generally rearwardly of the bracket.

3,804,052

MARINE-VESSEL MANEUVERING SYSTEM

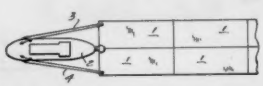
Wilhelm Lucht, Nordenham, Germany, assignor to Aktiengesellschaft "Weser", Bremen, Germany

Filed July 27, 1972, Ser. No. 275,828

Claims priority, application Germany, July 31, 1971, 2138443

Int. Cl. B63b *21/00, 35/70*

U.S. Cl. 114—235 R **6 Claims**



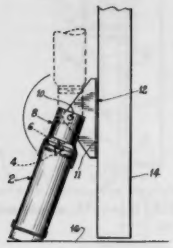
A powered first marine vessel has a bow and at least one non-powered second marine vessel is to be maneuvered by pushing it with the first vessel. The second vessel has a stern portion. A thrust-transmitting arrangement is provided on the bow of the first vessel. A portable thrust-receiving arrangement is removably connectable with the stern portion of the second vessel and includes a vertically oriented elongated beam which is to be contacted by the thrust-transmitting arrangement and releasable connectors for connecting the beam with the stern portion of the second vessel.

3,804,053

COMBINATION STOP AND ALARM

James R. Gray, Little Rock, Ark., assignor to John W. Terdina, West Chicago, Ill.

Filed July 30, 1973, Ser. No. 384,044
Int. Cl. G08b 15/00
U.S. Cl. 116—13 15 Claims



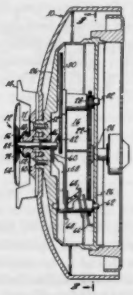
A security device in the form of a combination alarm and door or window stop is constituted by a container of pressurized gas combined with a sound generator and suitable mounting means so that the device may be secured at one end to the movable surface of a door or window and be supported at its other end on a fixed surface so that if an unauthorized opening is attempted the sound generator will move slightly to release the pressurized gas from the container so as to cause an alarm sound to be generated and at the same time movement between the movable surface and the fixed surface is prevented. The mounting means is such that the device can be inactivated by moving it to an out of the way position. The application discloses both permanently installed and portable versions.

3,804,054

WARNING DEVICE FOR FIRE PROTECTION SYSTEM

Edward L. Gallagher, Capistrano Beach, Calif., assignor to A-T-O Inc., Willoughby, Ohio

Filed Sept. 7, 1971, Ser. No. 178,247
Int. Cl. G08b 17/00
U.S. Cl. 116—106 25 Claims



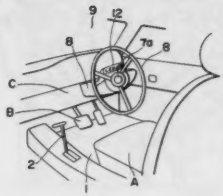
This invention relates to an alarm system having a conspicuous warning signal which is automatically exposed to indicate depletion of an exhaustible power supply used to power the alarm. The warning signal remains until sufficient reserve power is restored to the exhaustible power supply and until the alarm is properly fused. The alarm system also includes a device for preventing manipulation of triggering mechanism which would prematurely silence the alarm before the power supply is exhausted, presetting of this triggering mechanism being prevented unless the power supply has a predetermined minimum available power level.

3,804,055

FLOOR-TYPE GEAR-SHIFT LEVER POSITION INDICATION ARRANGEMENT FOR USE IN A MOTOR-VEHICLE

Takehiko Nishikawa, Inazawa; Shinya Ito, and Yasuhiko Ibuka, both of Aichi-ken, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Filed Mar. 2, 1973, Ser. No. 337,578
Claims priority, application Japan, Mar. 3, 1972, 47-22084
Int. Cl. G09f 9/00
U.S. Cl. 116—124 R 10 Claims



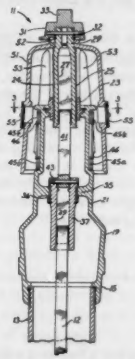
An arrangement for indicating the position of a floor-type shift lever in a motor vehicle in which a floor-type shift lever position indication is given at a position which is just beyond the steering wheel and therefore easily observed as a conventional steering-column shift lever position indication means.

3,804,056

VALVE INDICATOR POST

Dennis D. Lee, and Carter C. Crookham, both of Oskaloosa, Iowa, assignors to Clow Corporation, Oak Brook, Ill.

Filed Sept. 15, 1972, Ser. No. 289,737
Int. Cl. F16k 37/00
U.S. Cl. 116—125 8 Claims



An indicator is provided for a valve which enables a visual determination to be made whether the valve is open or closed from relatively great distances and from any viewing angle.

3,804,057

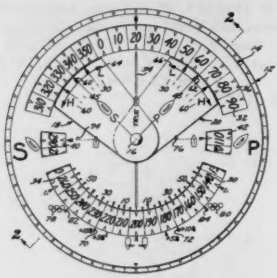
SAILBOAT RACING CALCULATOR

Richard E. Toscan, 26410 Birchfield Ave., Palos Verdes Peninsula, Calif.

Filed Oct. 12, 1972, Ser. No. 296,980
Int. Cl. G09f 9/00
U.S. Cl. 116—133 6 Claims

A sailboat racing calculator which is mounted on a sailboat adjacent a compass. A compass dial marked with compass

bearings is coaxially rotatably supported below a reference disc having windows for viewing the compass markings on the bearing dial. A pair of starboard and port tack arms are



pivotally mounted relative to the compass dial and reference disc. The dial and the tack arms are rotatable relative to one another and the disc to permit the sailor to utilize his compass readings as a guide for planning an optimum racing course.

3,804,058

PROCESS OF TREATING A WELL USING A LIGHTWEIGHT CEMENT

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

Filed May 1, 1972, Ser. No. 248,905

Int. Cl. E21b *33/14*

U.S. Cl. 166—292 **6 Claims**

This specification is directed to a lightweight hydraulic cement, to the use of lightweight slurries formed by combining this lightweight cement with water, and to lightweight concrete formed by the setting of the slurries. The lightweight hydraulic cement is comprised of hydraulic cement, anhydrous sodium metasilicate, and hollow sealed spheres; a lightweight slurry is formed by mixing the lightweight cement with water and the slurry is used for treating wells that penetrate the earth. This lightweight slurry may also be used for forming lightweight concrete which in turn is useful for such things as building material.

3,804,059

DEVICE FOR THE APPLICATION OF A METAL COATING ON THE INTERNAL CYLINDRICAL SURFACE OF A HOLLOW BODY

Dominique Thomas Francois Leon Streel, Cointe-Schlessin, Belgium, assignor to Cockerill-Ougree-Providence et Espirance-Longdoz, Seraing-Les-Liege, Belgium

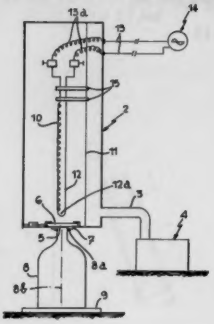
Filed Jan. 19, 1972, Ser. No. 219,072

Claims priority, application Belgium, Jan. 22, 1971, 43161

Int. Cl. C23c *13/12*

U.S. Cl. 118—49 **1 Claim**

In a device for the application of a metal coating on the internal surface of a hollow metal element in the form of a cylinder of revolution there is provided a sealed enclosure adapted to be placed on to said hollow element, a pumping set for generating a high vacuum in said enclosure which is provided with a hole cooperating with an orifice in said hollow element, electrically conductive elements passing through said hole of said enclosure from which they are insulated, a source of current connected to said conductive elements and a



vapour emitter connected to said conductive elements and adapted to be introduced into said hollow metal element.

3,804,060

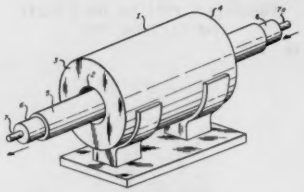
LIQUID EPITAXY APPARATUS

John A. Donahue, Sudbury, and Henry T. Minden, West Concord, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 23,148, March 27, 1970, Pat. No. 3,697,330. This application June 28, 1972, Ser. No. 266,867

Int. Cl. H01l *7/00*

U.S. Cl. 118—64 **7 Claims**



An apparatus and method for practicing liquid-phase epitaxial purification of semiconductor materials and for the preparation of semiconductor films or junction semiconductor devices employs a novel closed cylindrical graphite crucible element. The molten material to be deposited on a substrate is brought into contact with the substrate by simple rotation of the crucible about an axis of symmetry.

3,804,061

PAPER DISPENSER

Louis Joseph Cassar, 55 Bouck Rd., and Peter D. O'Brien, 20 Balsam Pl., both of Elliot Lake, Ontario, Canada

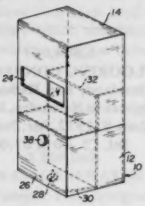
Filed May 2, 1972, Ser. No. 249,729

Int. Cl. B05b *13/02*; **B05c** *5/00*

U.S. Cl. 118—325 **3 Claims**

A dispenser for tissue in sheet or roll form includes a container having a storage compartment and a reservoir compartment. A sealed container having a suitable fluid therein is

placed in the said reservoir compartment and a conduit is provided for transmitting the fluid from the sealed container to



the tissue and there is means for applying pressure to said sealed container thereby to spray said fluid onto the tissue.

3,804,062

ELECTROPHOTOGRAPHIC DEVELOPING DEVICE

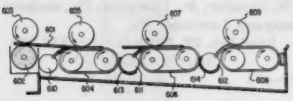
Osamu Fukushima, and Masamichi Sato, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1970, Ser. No. 92,976

Claims priority, application Japan, Nov. 27, 1969, 44-95222

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **3 Claims**



An electrophotographic developing device comprising an electroconductive endless belt driven in a substantially horizontal plane, means for forwarding a flexible electrophotographic sensitive material carrying thereon an electrostatic latent image onto the upper surface of the endless belt at substantially the same speed and in the same direction as the belt, and a means for supplying a liquid developing agent to the opening between the endless belt and the electrophotographic sensitive material so that the liquid developing agent is retained between the endless belt and the electrophotographic sensitive material and conveyed therebetween so that the agent develops the electrostatic latent image on the electrophotographic sensitive material.

3,804,063

VERTICAL FISH FARM

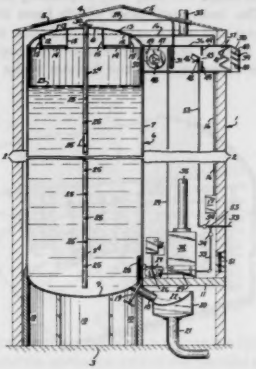
John F. Finger, Beresford, S. Dak., assignor to Sioux Corporation, Beresford, S. Dak.

Filed Feb. 1, 1973, Ser. No. 328,619

Int. Cl. A01k *63/00*

U.S. Cl. 119—3 **3 Claims**

A vertically elongated tank disposed within a building and having a perforated water circulating tube extending downwardly from the upper end of the tank for the greater part of the length of the tank. A water pump is disposed to receive water from the lower end portion of the tank and deliver water under pressure to the upper end of the circulating tube. A water heater is disposed to heat the water between the discharge outlet of the pump and the upper end of the circulating tube. An air heater is mounted in the building to receive air from outside the building and deliver heated air into the upper end portion of the tank above the normal level of water within the tank. The upper end of the tank has



openings for admitting light to the interior of the tank, and for letting heated air escape from the tank to the interior of the building to warm the building during cold weather.

3,804,064

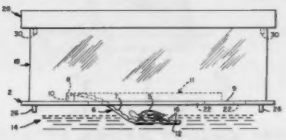
AMPHIBIAN TERRARIUM FOR USE WITH AQUARIUMS

William A. Kuneman, Milpitas, and Joe N. Sunseri, San Jose, both of Calif., assignors to Aqua-Sun, Incorporated, San Jose, Calif.

Filed Nov. 16, 1972, Ser. No. 307,007

Int. Cl. A01k *63/00*

U.S. Cl. 119—5 **6 Claims**



The invention is concerned with an amphibian terrarium for use with an aquarium which allows an amphibian, such as a turtle, to spend a substantial portion of his time in an aquarium in a water environment with tropical fish, plants and the like and which further provides a fixed ramp whereby the amphibian can climb out of the water and onto a dry simulated land area which allows the amphibian to spend the remainder of his time in an earth environment with sand, dirt and plants. An important feature of the present invention is the use of a ramp, one end of which extends from the simulated land area downwardly to beneath the water level in the aquarium to allow an amphibian to readily swim onto its lower ledge so that he may climb up the ramp to the dry simulated land area, the ramp having a moderate angle of inclination and good traction characteristics.

3,804,065

AIRPLANE ANIMAL ENCLOSURE

Harvey W. Coates, Scarsdale, N.Y., assignor to J. D. Smith Inter Ocean Inc., New York, N.Y.

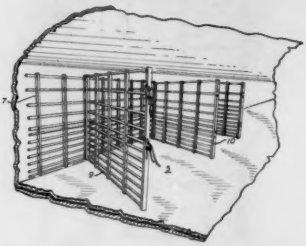
Filed July 25, 1972, Ser. No. 274,858

Int. Cl. A01k *1/02*

U.S. Cl. 119—11 **3 Claims**

A pen enclosure for use in holding animals while they are being shipped by air. The pen comprises individual gates

which are removably joined together to form enclosed areas throughout the fuselage of an aircraft without the gates themselves being connected to the aircraft. The pens are generally rectangular in shape but may vary depending on the shape of the plane. The individual gates which form the enclosures have horizontal bars which are positioned close together at the bottom and further apart at the top. This prevents smaller animals from escaping from the bottom while reducing the



overall weight of the gates because of the lack of bars at the top. Also, to further reduce the weight of the pens, they do not have tops; the roof of the plane serves as the top of the pens. However, to prevent the animals from contacting the roof of the plane, a group of animals are loaded into each pen and the animals in the pen are packed together so closely that they cannot be jostled about sufficiently to contact the roof of the plane during flight.

3,804,066

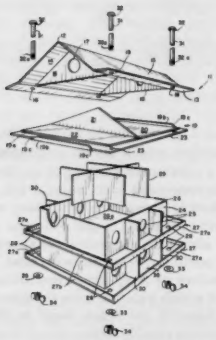
MULTI-DWELLING BIRDHOUSE

William A. Lowe, 963 Lavoie Ave., Elgin, Ill.

Filed Dec. 4, 1972, Ser. No. 311,872

Int. Cl. A01k *31/00*

U.S. Cl. 119—23 **3 Claims**



A multi-part multi-compartment birdhouse including a plurality of vertically stacked substantially identical containers each having a plurality of entrance openings spaced about the wall surfaces thereof and each having a removable set of dividers disposed in each container for dividing the container into a plurality of individual compartments, each container comprising a tier of the birdhouse with each tier being separated by a tier separation member, a roof member adapted to cover the top of the topmost container, and a plurality of elongated bolt like members passed through a like number of spaced apart openings in the roof member and tier separation members for assembling the birdhouse in a manner permitting ease of disassembly thereof for purposes of cleaning and replacement of components, and each tier separation member providing an individual and private balcony and perch for each of the entrance openings of each associated container.

3,804,067

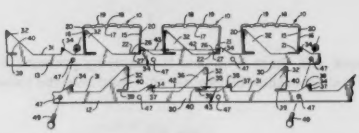
SLATTED FLOORING CONNECTOR SYSTEM

Russell B. Lehe, Cleveland, and Richard L. Torbeti, Akron, both of Ohio, assignors to Norandex, Inc., Cleveland, Ohio

Filed June 9, 1972, Ser. No. 261,395

Int. Cl. A01k *01/00*

U.S. Cl. 119—2P **8 Claims**



A lightweight, easily-assembled slatted flooring system for an animal enclosure comprising a plurality of channels interlocked in spaced parallel relationship by connectors having a base, and first and second upwardly extending portions which engage the bottom and sidewalls of the channels to lock the channels in place.

3,804,068

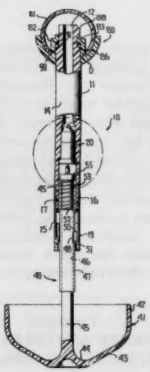
WATER FOUNTAIN

Frederick W. Steudler, Jr., Lancaster, Pa., assignor to Vallorbs Jewel Company, Lancaster, Pa.

Filed Feb. 29, 1972, Ser. No. 230,388

Int. Cl. A01k *07/00*

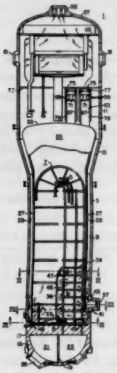
U.S. Cl. 119—81 **25 Claims**



This disclosure relates to a novel water fountain for poultry or other animals, the water fountain including a support member adapted to be suspendingly supported in a generally upright position with valve means in an axial opening or bore for controlling the flow of water therethrough, a cup assembly carried by the support member and support means in the form of a sleeve telescopically receiving a rod of the cup assembly with means for biasing the latter toward the valve for operating the valve in response to the weight of water in the cup, and means between the sleeve and the support member for axially stepwise adjusting the sleeve relative to the rod whereby the force of the biasing means may be regulated to cor-

respondingly vary the operation of the valve for desired different weights of water in the cup. The stepwise adjustment is effected by a plurality of axially spaced circumferentially offset lands on the support member and a radially outwardly directed lug on the sleeve with each land opposing an axially spaced and aligned valley which automatically aligns the lug with each land upon relative rotation between the sleeve and the support member.

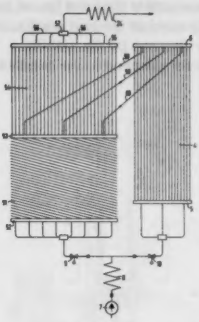
3,804,069
STEAM GENERATOR
Robert R. Bennett, Tampa, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 9, 1972, Ser. No. 224,804
Int. Cl. F22b *1/06*
U.S. Cl. 122—34 **6 Claims**



A shell and tube steam generator having a U-shaped tube bundle and a preheater. The preheater is disposed on the cold leg portion of the tube bundle and is cooperatively associated with an annular chamber formed by a tube bundle wrapper and the shell to direct inlet water upwardly through the preheater portion and downwardly through the annular chamber, across the tube sheet and upwardly along the outside surfaces of the tubes to optimize the temperature and pressure of the steam produced.

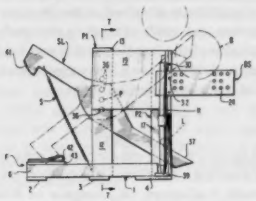
3,804,070
LARGE FLOW-THROUGH BOILER
Rupprecht Michel, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany
Filed Sept. 7, 1972, Ser. No. 286,704
Claims priority, application Germany, Sept. 7, 1971, 2144675
Int. Cl. F22b *29/06*
U.S. Cl. 122—406 S **4 Claims**

A boiler includes a heating wall formed of an assembly of tubes and defines a combustion chamber, a heating partition formed of a tube system subdividing the combustion chamber and connected in parallel with the heating wall tube assembly for conducting liquid working medium, and means for adjusting the rate of flow of the working medium through the heating wall and the heating partition so that the temperature of the working medium at the outlet of the heating partition is maintained considerably below the temperature thereof at the heating wall, the heating wall comprising a heating surface tube section having a downstream end in flow direction of the working fluid, a multiplicity of parallel tube strings greater in number than the heating surfaces of the tube section and having an upstream end and a flow-through collector manifold



connected between the downstream end of the heating surface tube section and the upstream end of the parallel tube strings.

3,804,071
BALL PROJECTING APPARATUS
John C. Winrow, c/o ASI 3529245, 713 Division, FAU COMFAIRWESTPAC, FPO, Seattle, Wash.
Filed Apr. 28, 1971, Ser. No. 138,102
Int. Cl. F41b *7/00*
U.S. Cl. 124—16 **2 Claims**

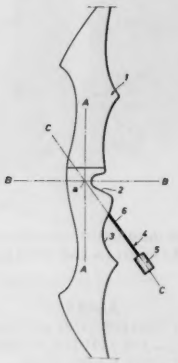


A ball projecting apparatus, particularly suited for "setting" a volleyball to assist a player to practice "spiking", comprises a biased ball striker member; a control pin for releasably retaining the striker member in non-striking position. The apparatus is selectively conditionable for varying the trajectory of a projected ball. The varying of the trajectory may be accomplished by varying the force of impact of the striker member on the ball, or by varying the angle at which the striker member impacts the ball, or by both varying the force of impact and the impact angle. The apparatus has a ball supporting structure that is vertically adjustable. The ball supporting structure has pins that may be selectively positioned to support a ball. The pins terminate short of their oppositely extending pin counterparts to provide clearance for the striking lever. The lever is vertically adjustable with respect to the apparatus.

3,804,072
COMBINATION OF ARCHERY BOW WITH SINGLE OR PLURAL STABILIZERS
Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed Feb. 17, 1971, Ser. No. 115,996
Claims priority, application Japan, Feb. 21, 1970, 45-14620
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 R **9 Claims**

An archery bow with: a handle section, a hand portion and at least one stabilizer made up of a weight body and a rod

member connected together. The stabilizer is attached to the front or belly side of the handle section and extends obliquely downwardly with respect to the longitudinal axis of the handle section in such a manner that the axial line of the rod member of the stabilizer is directed to the grip portion with the weight body disposed near the end of the stabilizer. The bow may have a second stabilizer attached to the handle section and extending out of the back side of the handle section perpendicular to the longitudinal axis thereof. The bow may also have another pair of stabilizers attached to the front or belly side of the handle section and each extending obliquely away from the longitudinal axis of the handle section and being symmetrically positioned with respect to a line perpendicular to the longitudinal axis of the handle section.



3,804,073

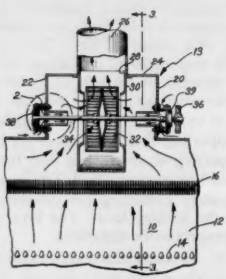
COOLING SLEEVE FOR SHAFT AND BEARING FOR HIGH TEMPERATURE GAS MOVING SYSTEM

Michio B. Nozaki, LaGrange, Ill., assignor to Rheem International, Inc., New York, N.Y.

Filed Mar. 18, 1971, Ser. No. 125,518

Int. Cl. F24h 3/00

U.S. Cl. 126—112 **1 Claim**



A cooling sleeve for the drive shaft of a draft inducer fan within a plenum extends into the plenum from a plenum wall. The fan drive shaft passes through the cooling sleeve and is fixed to a bearing spaced from and attached to the plenum wall on the outside of the plenum. By means of this construction, the bearing can be maintained at a safe cool operating temperature relative to the temperature of gases within the plenum.

3,804,074

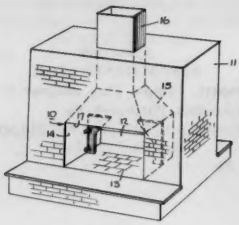
VORTEX PLATE FOR A THROUGH-FIREPLACE

Henry Illing, Parksville, N.Y., assignor to Henry Illing, Parksville, N.Y.

Filed Oct. 19, 1972, Ser. No. 299,127

Int. Cl. F24b 1/28

U.S. Cl. 126—125 **11 Claims**



A pair of plates are positioned within the through-fireplace at the middle of the hearth so as to obstruct circular motion of the heated air and maintain a preponderance of upward flow of the heated air. The plates each project into the fireplace chamber a distance of from about 0.20 to 0.25 times the width of the chamber while extending over the height of the chamber. The upper sections of the plate may also be of increased width.

3,804,075

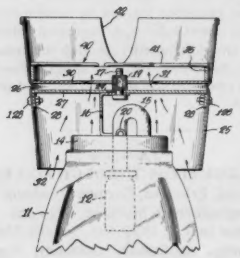
ATTACHMENTS FOR LANTERNS

Ralph R. Rummel, 336 Russel St., Sharon, Pa.

Filed Oct. 16, 1972, Ser. No. 297,793

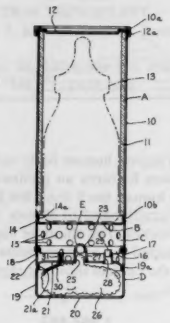
Int. Cl. F24c 5/04

U.S. Cl. 126—258 **3 Claims**



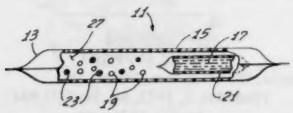
My invention relates to an attachment for a conventional lantern having a fuel reservoir, a glass globe enclosing a mantle which is illuminated by the fuel in the tank, and a central connection for a removable draft hood. My improved attachment is connected to the lantern, in place of the removed draft hood, and the same connection for the draft hood is used to connect the attachment to the lantern. The attachment comprises a tubular sheet metal member having a lower portion encircling the upper portion of the glass globe and an upper portion including means for supporting articles to be heated by the heat flowing upwardly through the tubular member.

3,804,076
BABY BOTTLE WARMER
John W. Fant, Rt. 7, Anderson, S.C., and David Gene Fant, Rt. 1-Mabry Acres, Williamston, S.C.
Filed Mar. 30, 1973, Ser. No. 346,263
Int. Cl. A47g 23/04
U.S. Cl. 126—261 2 Claims



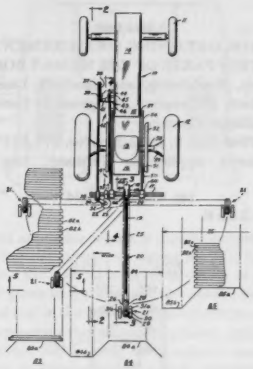
A warmer for maintaining a baby bottle and the like at a desired temperature includes an elongated insulated housing open at both ends with a cover at the top and a thin foraminous wall or partition carried adjacent the other end above a depending foramious skirt which contains a supply of heated air formed by a heater which is carried in a intermediate portion of a lower compartment which supplies a continuous heat from a glowing mantle which is furnished with fuel from a receptacle formed in the compartment therebelow, said receptacle having a foraminous wall above the heater and a cover constructed of textile material for carrying the warmer.

3,804,077
HOT OR COLD PACK
Vernon L. Williams, Dana Point, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.
Filed Aug. 5, 1971, Ser. No. 169,328
Int. Cl. B65d 79/00
U.S. Cl. 126—263 13 Claims



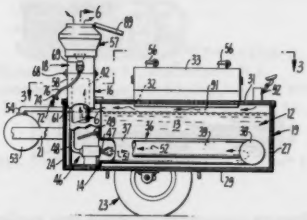
A hot or cold pack is provided in which two materials are normally separated from each other in separate compartments and in which the materials are mixed to produce a chemical reaction between the materials when one of the compartments is ruptured. The pack includes a third material such as a form of starch which is stored in one of the compartments and which responds to the mixture of the two materials to produce a gel. The production of the gel has certain advantages. One advantage is that the gel provides for the application of heat or cold continuously to a desired position such as the knee of a patient without having the materials in the pack slide to the opposite ends of the pack. Another advantage is that the gel prolongs the time during which the heat or cold can be applied to the desired position.

3,804,078
TRACTOR CARRIED, DRY CANE LEAVES BURNER POSITIONER AND METHOD OF USE
Harry J. Brazan, Rt. 1, Box 193, Vacherie, La.
Filed June 2, 1971, Ser. No. 149,200
Int. Cl. F24c 5/06
U.S. Cl. 126—271.2 C 24 Claims



The disclosed invention includes a boom connected to be rotated by manipulative means from the prime mower driver's seat to be selectively swung about pivot centrally of tool bar transversely arcuately across the harvested and row stacked cane for boom rear end carried burner disposition to discharge flame to ignite the dry leaves on the windward end of the pair of row stacked cane stalks. The swing means also includes means constantly to assure burner discharge in direction of prime mower travel. The prime mower travels down a passage row between pairs of cane stalked stacked rows and turns at rows ends to return down a next adjacent passage row as the driver manipulates boom swing for burner discharge disposal as aforesaid.

3,804,079
MELTING KETTLE AND APPARATUS AND METHOD FOR ELIMINATING OBJECTIONABLE EMISSIONS THEREFROM
William P. Schrader, Mill Valley, Calif., assignor to Cleasby Mfg. Co., Inc., San Francisco, Calif.
Filed June 1, 1971, Ser. No. 148,726
Int. Cl. E01c 19/45
U.S. Cl. 126—343.5 A 2 Claims



A melting kettle having provision for drawing off the noxious fumes from the melt and burning them with a flame in a combustion chamber. The kettle comprises an enclosed kettle chamber for holding bituminous material to be heated and melted, a vent stack extending from the chamber, a heat conduit communicating with the kettle chamber and terminating

in the vent stack, heat generating means to supply heated air to the conduit for heating the melt, burners disposed in the stack for supplying a flame in the path of the vented fumes, a combustion chamber adjacent the flame jet for supplying fresh air to the heated fumes and an inverted conical flame deflector and mixing baffle at the intersection of the paths of the vented fumes, heated air and flame jet to thoughly mix the various gases and facilitate complete combustion of the fumes.

3,804,080

DEVICE FOR OBTAINING MEASUREMENT AT OR WITHIN PARTS OF THE HUMAN BODY

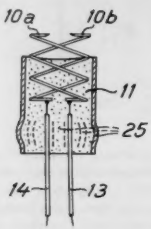
Helge Ruttgers, Heidelberg, and Heribert Lussem, Braunfels/Lahn, both of Germany, assignors to Hewlett-Packard GmbH, Boblinger, Germany

Filed Aug. 9, 1972, Ser. No. 279,121

Claims priority, application Germany, Aug. 10, 1971, 2140064

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 E **5 Claims**



A measuring head is described for mounting at or within parts of the human body, especially for obtaining ECG signals from a fetus. The measuring head includes electrodes separated from each other and connected to separate leads, in the form of two pointed opposite catchers mounted in an isolating carrier. A cannula may be provided so that liquid medicine or an electrolyte can be supplied to the body at the point of measurement.

3,804,081

ENDOSCOPE

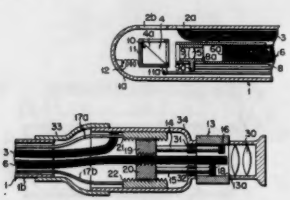
Kunio Kinoshita, and Mitsuto Itoh, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed July 26, 1972, Ser. No. 275,428

Claims priority, application Japan, July 29, 1971, 46-67502

Int. Cl. A61b *1/06*

U.S. Cl. 128—6 **11 Claims**



An endoscope comprising an object lens movable in the axial direction of the endoscope according to a varied distance between the observation end of the endoscope and the body cavity walls and a rotatable prism for transmitting reflections from the illuminated body cavity to the object lens whereby simple operation of said object lens and prism provides a proper focal distance and enables the desired region of the illuminated body cavity walls to be distinctly observed.

3,804,082

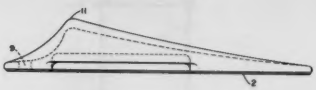
RESUSCITATION SUPPORT

Peter P. Tarjan; Jacob Goldstein, and Esperanto J. Simicich, all of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Apr. 26, 1972, Ser. No. 247,865

Int. Cl. A61h *7/00*

U.S. Cl. 128—67 **4 Claims**



A support for a supine human body to facilitate cardiopulmonary resuscitation features an inclined surface shaped to accommodate the human back from the shoulders to the buttocks in a narrow cradle, and to elevate the central shoulder region about 3–4 inches. The shoulder support region merges into a portion shaped to accommodate the head about 3 inches lower than the central shoulder region.

3,804,083

FACIAL WEAR

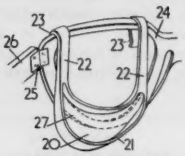
Earl Silas Tupper, Panama City, Panama, assignor to Tup! (Panama) S.A. Via Espana, Panama City, Panama

Filed Jan. 23, 1973, Ser. No. 326,079

Claims priority, application Great Britain, Jan. 28, 1972, 4025/72

Int. Cl. A61f *5/08*

U.S. Cl. 128—76 B **1 Claim**



A device for applying to the face, and specifically under, or beside, the eyes, has a suitable contoured area for holding a pad (e.g. moistened with astringent liquid) against the facial region and attachment means to keep the contoured area in place. It usually extends over the nose and beneath both eyes, and can be resiliently biassed to improve its grip.

3,804,084

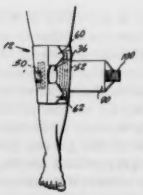
KNEE SUPPORT

Ira S. Lehman, 1830 N.E. Ter., Miami, Fla.

Filed Mar. 5, 1973, Ser. No. 337,944

Int. Cl. A61f *3/00*

U.S. Cl. 128—80 C **7 Claims**



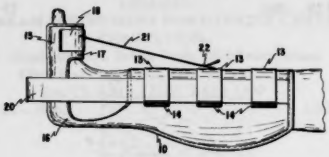
A knee support which comprises a pad to be wrapped about the knee and which includes an opening for the knee cap and

an elastic strip to be stretched over the central portion of the knee cap and an upper and lower elastic strip to extend about the knee cap above and below it, to provide support for an injured knee while healing and which includes stays to reinforce the support in use, which are preferably, adjustable.

3,804,085
TRACTION SPLINT

Adolph Eshuis, R.R. 2, and Andrew M. Jansma, both of Rock Valley, Iowa

Filed Oct. 24, 1972, Ser. No. 300,329
Int. Cl. A61f 5/04
U.S. Cl. 128—85 **5 Claims**



A traction splint including a form fitted body portion adapted to surround the calf of a leg, and to which is fastened a strap to apply a pulling force and a foot portion adapted to support the foot. An elastic strap provides an exercise means by which the problem of "foot drop" may be avoided.

3,804,086
SURGICAL VACUUM APPAREL

Boyd F. Agnew, 111 Via Lido Nord, Newport Beach, Calif.

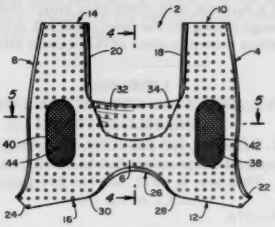
Continuation-in-part of Ser. No. 198,229, Nov. 12, 1971, which is a continuation-in-part of Ser. No. 47,414, June 18, 1970, Pat. No. 3,625,207. This application July 28, 1972, Ser. No. 276,155
Int. Cl. A61m 1/00
U.S. Cl. 128—146.2 **10 Claims**

An air harness in the form of a belt and a pair of suspenders is made of flexible multi-apertured tubing. Ends of the tubing are coupled to a connector positioned behind the wearer and having a rearwardly projecting main vacuum duct that connects to a vacuum hose. The harness and connector are positioned entirely beneath the surgical gown and may be either separable or inseparable therefrom. Air is drawn into the gown and, together with particles shed from the wearer's body, is drawn into the harness tubing for disposal at a remote location. An oronasal vacuum aspirator worn under or formed as a part of a surgical mask is connected to the rearwardly extending vacuum duct. Particles of bacteria and moisture exhaled or shed from the wearer, both in the vicinity of his head and in the vicinity of his torso, are collected by the vacuum system for remote disposal.

3,804,087
POST COSMETIC SURGERY PROTECTOR

Caron Sarnoff, 3206 Corinth, Los Angeles, Calif.

Filed July 24, 1972, Ser. No. 274,411
Int. Cl. A61f 13/12
U.S. Cl. 128—163 **20 Claims**

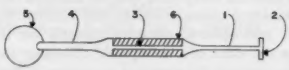


A pain relief appliance which is ideally suitable for utilization in post cosmetic surgery or upper neck or head injury or surgery wherein the appliance permits easing of pain because of the support given to the lower neck beneath the skull of the wearer thereof and in the case of the cosmetic surgery patient, a means of protecting the sensitive incision areas in front of, below and behind the ears of the cosmetic surgery patient. The appliance is fabricated of a soft, conformable, foam rubber and is easily adjusted to accommodate heads of various sizes and yet because of its configuration and material construction, allows support of the wearer's head in a comfortable manner inhibiting sensations of pain and allowing the wearer some measure of comfort especially when in the supine position.

3,804,088
REMOVABLE IMPLANTATE FOR ADMINISTERING PHYSIOLOGICAL ACTIVE AGENTS TO ANIMALS

Lamar H. Carroll, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 31, 1972, Ser. No. 276,545
Int. Cl. A61m 7/00; A61j 1/00
U.S. Cl. 128—260 **7 Claims**

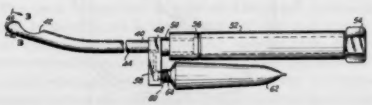


Removable implantate for inserting beneath the skin of an animal; said implantate comprising a medicated member in combination with a medicated member holder which can be readily removed from beneath the animal's skin at any time.

3,804,089
VACUUM CANNULA APPARATUS

Henry Bridgman, P.O. Box 71, Morristown, N.J.

Continuation-in-part of Ser. No. 63,480, Aug. 13, 1970, Pat. No. 3,713,444. This application June 8, 1971, Ser. No. 151,097
Int. Cl. A61m 1/00
U.S. Cl. 128—276 **10 Claims**



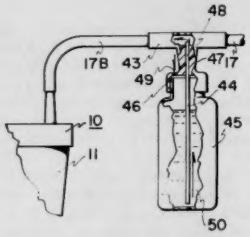
A vacuum curet for use with uterine aspirator apparatus. The curet has a cannula barrel with a suction port at one end,

and a manifold or handle at the other. A capillary runs along the inner length of the cannula barrel terminating at the cannula tip at one end and at the manifold at the other. The entire length of the capillary is pressure-tight. The design permits introduction of appropriate fluid into the uterus at any time during the operative procedure. Introduction of the fluid may be accomplished in different ways. One way is to apply manual pressure on a squeeze tube connected either directly (or indirectly through tubing) to the curet manifold. Alternatively, a standard syringe is used in place of the squeeze tube.

3,804,090
ADDITIVE STRUCTURE FOR VACUUM OPERATED LIQUID-FILL BOTTLES

Le Grand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah

Filed May 8, 1972, Ser. No. 251,115
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **13 Claims**

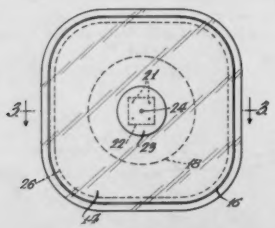


Structure providing for the addition of a foam reducing additive into the body-fluid flow of a sealed, self-contained, vacuum operated aspiration system. The customary vacuum bottle is supplied, proximate its fluid inlet, with an additive connection or structure communicating with the interior of the liquid feed-in line such that as liquid is drawn in under the influence of a reduced pressure within the vacuum bottle, the additive will likewise be drawn in, generally in proportional amounts. Many embodiments are suggested such as an additive bottle connection leading to a coupling elbow, an additive bottle teed into the body-fluid line, an additive bottle including a line-puncture cannula needle, and so forth. By the structure, either atmospheric pressure directly on the additive liquid or on the sides of a collapsible container thereof is relied upon to produce the pressure necessary to introduce and sustain introduction of additive into the feed-in line.

3,804,091
OSTOMY APPLIANCE

John L. Nolan, Glenview, and Bremen I. Johnson, Cary, both of Ill., assignors to Hollister Incorporated, Chicago, Ill.

Filed Sept. 18, 1972, Ser. No. 290,149
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **3 Claims**

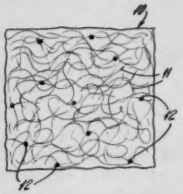


An ostomy appliance for controlled venting of gas from the intestinal tract and collection of small amounts of waste material following surgery comprising a flexible fluidtight pouch having a lateral opening adapted to register with an abdominal opening, means for sealing the pouch to the abdomen around the registered openings in the abdomen and in the pouch, vent means in the pouch for exhausting gas, a filter secured to the pouch adjacent the vent means for deodorizing gas exhausted through the vent, and an absorbent pad in the pouch.

3,804,092
WATER DISPERSIBLE NONWOVEN FABRIC

Deger Tunc, Edison, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 15, 1973, Ser. No. 323,665
Int. Cl. A41b *13/02*; A61f *13/16*
U.S. Cl. 128—284 **25 Claims**



A water dispersible nonwoven fabric comprising one or more layers of overlapping, intersecting fibers and from about four percent to about thirty-five percent by weight of an alkali cellulose ether sulfate resin binder, said nonwoven fabric having good tensile strength and abrasion resistance in the presence of body fluids such as urine, blood, and menstrual fluid. The nonwoven fabrics may be incorporated in body fluid absorbent products such as sanitary napkins, diapers, surgical dressings, and the like.

3,804,093
MEDICAL DEVICE: RECTA-BAG

Wilhelmine M. Fell, Lindsay, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Nov. 10, 1972, Ser. No. 305,443
Int. Cl. A61f *13/16*
U.S. Cl. 128—286 **2 Claims**

A medical device for collecting solid and liquid waste discharged from an orifice or opening in a patient, said device comprising a disposable bag into which the waste is discharged, the bag having a waste receiving opening; a velcro type fastener secured to the periphery of the bag opening; and a mating velcro type fastener secured detachably to the patient and surrounding the orifice or opening whereby the bag is sealed to the patient in a liquid tight manner when the two fasteners are detachably engaged.

3,804,094

BODY FLUID ABSORBENT MATERIAL CONTAINING PERIODIC ACID AS DEODORIZING AGENT

Georges Manoussos, Paris; Koovi Gatien Dossou, Vert-Galant par Vaujours, and Martine Gascon, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Filed Feb. 7, 1973, Ser. No. 330,461

Claims priority, application Luxembourg, Feb. 7, 1972, 64742

Int. Cl. A61f *13/16*

U.S. Cl. 128—290 R 8 Claims

An absorbent material for use in absorbing body fluids, has a fluid permeable outer portion impregnated with deodorizing amounts of periodic acid.

3,804,095

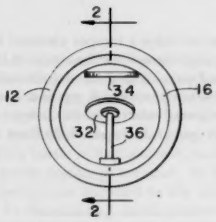
LASER BEAM INSTRUMENT FOR UTERINE CERVICAL CONIZATION

Herbert C. Bredemeier, 5 Bridle Path, Middlesex, Mass.

Filed Mar. 24, 1972, Ser. No. 237,614

Int. Cl. A61b *17/36*; A61n *5/00*

U.S. Cl. 128—303.1 15 Claims



An instrument for surgically removing a solid cone of tissue. An inner cylinder is rotatably fitted within an outer cylinder. Mirrors are mounted inside the inner cylinder and positioned such that a narrowly converging laser beam, traveling down the cylindrical axis, is deviated to exit the instrument in a direction which intersects the cylindrical axis at an acute angle. By rotating the inner cylinder with its mirrors, the exiting laser beam is caused to sweep out a conical surface. In cervical conization, the instrument is inserted so that its distal end is adjacent the cervix and the beam is incident thereon to excise a cone-shaped sample. In one embodiment, an axial guide pin protrudes from the distal end for insertion through the cervical os.

3,804,096

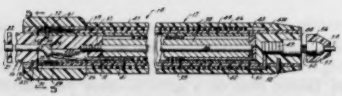
ELECTROSURGICAL DEVICE

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply International Inc., York, Pa.

Continuation-in-part of Ser. No. 214,044, Dec. 30, 1971, abandoned. This application Nov. 30, 1972, Ser. No. 310,830

Int. Cl. A61b *17/36*

U.S. Cl. 128—303.14 12 Claims



An electrosurgical device in which high frequency electrical energy powers a cutting electrode. Radio frequency energy is set up in a driver coil which can be in a male member. A female handpiece member can be removably mounted on the male member. A handpiece coil in the handpiece member is energized by the driver coil to energize a surgical electrode connected to one end of the handpiece coil. A return path from a patient is formed by coupling between the patient and the handpiece coil. The handpiece element can be readily removed from the male member so that another handpiece element can be substituted. A releasable electric connection is formed when the male member is inserted in the handpiece element to connect the end of the handpiece coil remote from the surgical electrode to ground.

3,804,097

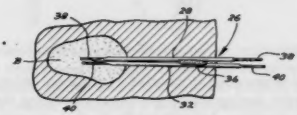
METHOD OF IRRIGATING AND TREATING AN ABCESS

Peter S. Rudie, 302 Mid Dr., Duluth, Minn.

Filed Dec. 14, 1972, Ser. No. 315,231

Int. Cl. A61m *27/00*, *7/00*

U.S. Cl. 128—350 R 3 Claims



The method of treating a cavity within an anatomy consisting in inserting an elongated member into the cavity, then forcing one barrel of a double hollow needle upon the elongated member for guidance of the needle into the cavity, then withdrawing the elongated member, then inserting an irrigating supply tube through one barrel of the double needle into the cavity, then inserting an irrigating drain tube through the other barrel of the double needle and into the cavity, then withdrawing the double needle upon the tubes out of the cavity with the tubes remaining in the cavity, then connecting a liquid supply line to said supply tube and a drain line to said drain tube, then supplying a liquid to the supply line for irrigating the cavity and draining out said drain line.

3,804,098

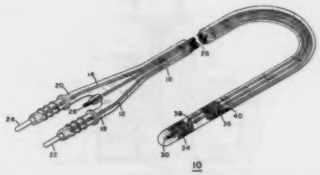
BODY IMPLANTABLE LEAD

Harry G. Friedman, New Brighton, Minn., assignor to Medronic, Inc., Minneapolis, Minn.

Filed Apr. 17, 1972, Ser. No. 244,841

Int. Cl. A61n *1/04*

U.S. Cl. 128—404 9 Claims



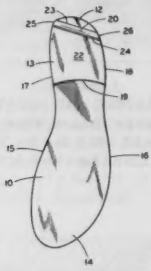
A body-implantable, bipolar lead for insertion in and guidance through a body vessel to a desired location inside the body. The lead comprises a pair of electrical conductors adapted to be connected at their proximal end to a source of electrical energy. The conductors are substantially covered with a material substantially inert to body fluids and tissue. Tip and proximal electrodes spaced from one another are formed as an integral part of the corresponding conductor by at least a portion of the conductor projecting radially through the outer surface of the covering material and being at least partially exposed.

3,804,099

ORTHOPEDIC HEEL

Thomas D. Hall, 821 Hudson Rd., Glenview, Ill.

Filed Mar. 5, 1973, Ser. No. 338,393
Int. Cl. A43b 7/24
U.S. Cl. 128—583 5 Claims



The heel is designed to provide a rotational stress to the leg of the wearer during walking without providing stress to the foot when standing. An orthopedic heel is provided which is particularly suitable for correcting internal tibial torsion or hip anteversion.

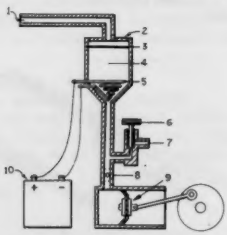
The heel includes a pair of side surfaces with one of the side surfaces extending posteriorly beyond the other side surface and an inclined or beveled planar posterior surface which extends angularly between the side surfaces. The rearwardmost portion of the inclined posterior surface provides a strike portion which engages the ground first during the heel strike phase of the wearer's gait and tends to rotate the lower extremity to bring the planar posterior surface of the heel into full engagement with the ground. The heel is provided with planar parallel upper and lower surfaces so that no undesirable stresses are provided to a normal foot during standing when the lower surface of the heel engages the ground.

3,804,100

SMOKING PIPE

Leonard Anthony Fariello, Mail Rt. No. 1, Blairstown, N.J.

Filed Nov. 22, 1971, Ser. No. 200,905
Int. Cl. A24f 1/14
U.S. Cl. 131—173 8 Claims



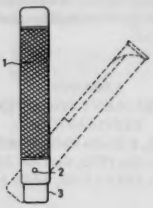
The device comprises a combustion chamber into which smoking material is disposed for burning, and has means for igniting the smoking material. A first conduit communicates the combustion chamber with a conduit-terminating mouthpiece, and a second conduit communicates the combustion chamber with an air pump. Accordingly, the combustion chamber is intermediate the pump and the mouthpiece, so that the pump forces air through the second conduit, to and through the chamber, and to and through the first conduit, serially. In one embodiment of the device, a water chamber is interposed between the combustion chamber and the mouthpiece to serve as a smoke washing filter.

3,804,101

SELF-CLEANING PIPE TAMPER

Steffen Roth, Hochstadter Landstrasse 17, 645 Hanau/Main, Germany

Filed Aug. 7, 1972, Ser. No. 278,198
Claims priority, application Germany, Aug. 5, 1971, 2139185
Int. Cl. A24f 9/08
U.S. Cl. 131—243 7 Claims



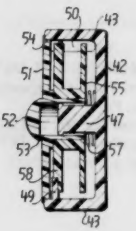
A pipe tamper includes a tamper element having a tamper disc at the outer end thereof and being pivoted at the opposite end to a U-shaped yoke. The yoke includes a brush for wiping particles from the tamper disc. A pin and a scraper blade are also pivotally mounted relative to the tamper and yoke members. The tamper, pin and scraper blade form an enclosed unit when not in use.

3,804,102

DENTAL FLOSS DISPENSER

William E. Bennington, 51 Fillmore Dr., St. Armands, Sarasota, Fla.

Continuation-in-part of Ser. No. 180,344, Sept. 14, 1971, Pat. No. 3,747,611. This application Jan. 19, 1973, Ser. No. 325,099
Int. Cl. A61c 15/00
U.S. Cl. 132—92 A 6 Claims



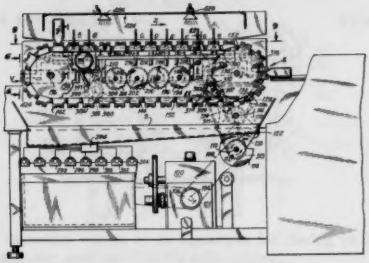
This invention relates to a dental floss dispenser comprising an elongated finger section and a dental floss spool holding section. Dental floss on a spool is easily threaded from the spool section to the end of the finger section through an open slot on the side and through open slots in the finger of the dispenser. Turning of the spool to withdraw floss is controlled by a pin which engages a notch on the spool. Push button means on the side of the dispenser release the spool from the pin to permit the spool to turn.

3,804,103

AUTOMATIC BOTTLE CLEANING MACHINE

Joseph M. Cozzoli, Plainfield, N.J., assignor to Cozzoli Machine Company, Plainfield, N.J.

Filed Feb. 7, 1973, Ser. No. 330,271
Int. Cl. B08b 3/02, 9/08
U.S. Cl. 134—48 24 Claims



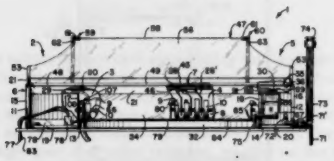
A machine for automatically washing bottles including a dirty bottle infeed location, a plurality of cleaning stations and a clean bottle discharge location. A releasable multibottle securing device is attached to a conveyor. The conveyor intermittently and cyclically moves the securing device to and pauses at the dirty bottle infeed location, each cleaning station and the clean bottle discharge location. At the dirty bottle infeed location bottles are directed to the securing device and held thereby. As the securing device pauses at each cleaning station, the bottles held thereby are treated with a fluid so as to be cleaned after passing through the last cleaning station. After leaving the last cleaning station the securing device and the bottles held thereby move to the clean bottle discharge location where the bottles are ejected from the securing device.

3,804,104

DISHWASHING APPARATUS

Duane A. James, 107 Eden Roc, Dallas, Tex.

Filed May 8, 1972, Ser. No. 250,875
Int. Cl. A47l 15/24; B08b 3/02
U.S. Cl. 134—72 8 Claims



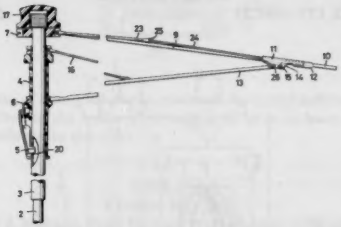
A dishwashing apparatus operative to move dishes, glasses silverware, and the like from a loading station to a cleansing area and a rinsing area and an unloading station includes a housing supporting an endless foraminous conveyor above a liquid chamber having a cleansing liquid portion and a rinsing liquid portion and a plurality of sets of liquid moving members and liquid directing members arranged and positioned within the liquid chamber to receive cleansing liquid and rinsing liquid and direct same toward the conveyor and articles thereon in the respective areas.

3,804,105

COLLAPSIBLE UMBRELLA

Katsumasa Yano, 395-522, Oaza-imakuma, Sayama-cho, Minamikawachi-gun, Osaka, Japan

Filed Nov. 13, 1972, Ser. No. 305,826
Int. Cl. A45b 19/00
U.S. Cl. 135—25 R 1 Claim



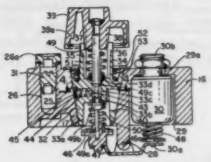
A collapsible umbrella comprising an extensible mainstay shaft; an upper runner (hub) secured to the terminal of said shaft; a middle runner and a lower runner slidably mounted on said shaft; a base rib having a U-shaped section pivoted at the base end thereof on said upper runner (hub), the other end thereof constituting a stopper consisting of an annular tube; a sliding tube having a mounting piece slidably fitted to the base rib; a slide rib pivoted at one end thereof on said mounting piece thereby enabling said slide rib to slide in or out of the base rib; a primary stay rib pivoted at the base end thereof on the lower runner and at the other end thereof on the mounting piece of said sliding tube; a secondary stay rib pivoted at the base end thereof on the middle runner and at the other end thereof on the middle part of the primary stay rib pivoted on the lower runner; a support lever comprising two lever members foldably linked together, a first lever member being pivoted at one end thereof on the upper runner (hub), a second lever member which is bifurcated being pivoted at the free end thereof in an elongated hole provided on the mounting piece of the sliding tube.

3,804,106

COMBINED ROTARY, SAFETY AND IGNITOR GAS VALVES

John D. Buezis, Seal Beach, and Louis L. Mucciante, Cerritos, both of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 21, 1972, Ser. No. 282,533
Int. Cl. F23d 13/46
U.S. Cl. 137—66 4 Claims



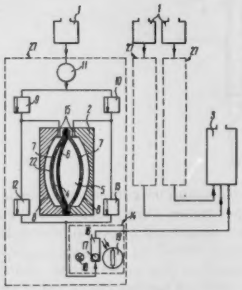
A manifold gas valve having a plug valve with main, pilot and ignitor gas passageways therein; a knob for rotating the plug valve, a pilot burner flame responsive safety valve upstream of the plug valve and a normally closed ignitor valve in the ignitor gas passageway. There is means on said knob arranged to actuate said ignitor valve and safety valve to their open positions, when the plug valve is in the position that permits gas flow to both a pilot burner and an ignitor burner for igniting the pilot burner from a remote position but permits no gas flow to the main burner, when the knob is moved axially with respect to the plug valve.

3,804,107

DEVICE FOR PREPARATION OF A DIALYZING SOLUTION

Jury Gotlibovich Kozlov, Khoroshovskoe Shosse, 11, kv. 47; Adolf Eserovich Khaitlin, ul. Molodtsova, 9, kv. 7, and Galina Konstantinovna Lisitsina, Bolshevistsky per. 13/3, kv. 13, all of Moscow, U.S.S.R.

Filed Apr. 5, 1972, Ser. No. 241,277
Int. Cl. F16k *19/00*
U.S. Cl. 137—101.31 5 Claims



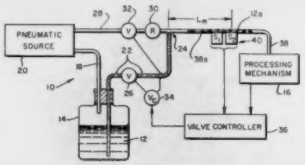
A device for the preparation of dialyzing solutions comprises a number of metering units, one for each solution component, each including a reservoir for storing a component, communicating via a metering element with a further, common reservoir for mixing the components. The metering element in each unit has two spaces divided by a flexible impermeable diaphragm, each space accommodating a perforated limiting plate. These spaces communicate through inlet valves in each unit with a pump delivering the respective component from its storing reservoir and, through outlet valves, with the common, further reservoir. The units are fitted with sensors indicating the flow rate of the solution components.

3,804,108

APPARATUS FOR THE SELECTIVE DISPENSING OF A LIQUID AND A GAS

Christopher Ferrari, Weston, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed Oct. 20, 1972, Ser. No. 299,350
Int. Cl. F16k *19/00*
U.S. Cl. 137—112 20 Claims



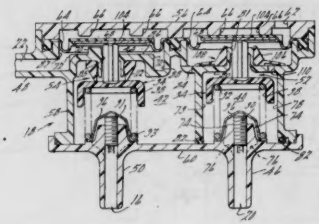
Apparatus for the selective dispensing of a liquid has a conduit junction having a single output branch and which selectively receives the liquid under pressure at a liquid input branch and a gas under pressure at a gas input branch. Valve means apply either the gas or the liquid to the conduit junction, which has a chamber forming a common fluid-passage between the two input and single output branches. The conduit junction maintains a stable interface between the input fluid being transferred to the output branch and the other input fluid, so that the liquid is dispensed only when specified, and then with minimal inclusion of the gas, thereby making possible the accurate and precise dispensing of the liquid.

3,804,109

VACUUM BIAS SWITCH

Frank J. Martin; Robert W. Eshelman, and Rudolph Bergsma, all of Ann Arbor, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 1, 1972, Ser. No. 311,181
Int. Cl. F02p *5/10*
U.S. Cl. 137—119 7 Claims



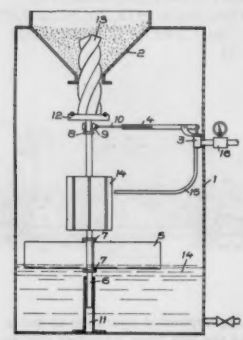
In the operation of the spark advance control system of an internal combustion engine, a vacuum bias switch is inserted in the vacuum line to the vacuum motor of the spark advance control unit to switch the line between different sources of vacuum during engine operation. The vacuum bias switch is responsive to one vacuum source generated at the carburetor up to a predetermined vacuum and then maintains that vacuum level until a second vacuum source exceeds the level. At that time, the vacuum bias switch connects the second vacuum source to the vacuum motor. The switch is a bi-directional switch in that it operates in both increasing and decreasing vacuum pressures. The structure of the switch completely isolates the two vacuum sources from each other.

3,804,110

MIXER TANK FOR DISPENSING POWDERY PRODUCT

Jean Pierre Madern, Cabestany, France, assignor to Tunzini Entreprise, Paris, France

Filed Apr. 6, 1972, Ser. No. 241,562
Claims priority, application France, Apr. 8, 1971, 71.12583
Int. Cl. B67d *5/08*
U.S. Cl. 137—268 3 Claims



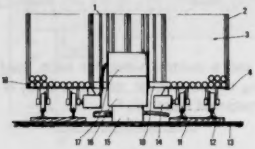
A hopper is mounted on a tank and has an extraction screw entering a valved opening therein for extracting a dose of powder from the hopper into the tank, and fluid enters the tank through a tap, the screw being rotated by a turbine driven by the entering fluid. The valve and tap are controlled by a float the level of which varies with the level of fluid in the tank.

3,804,111

APPARATUS FOR STORING A FLEXIBLE ELONGATED MEMBER, SUCH AS A FLEXIBLE DRILL COLUMN

Michel Chatard, Chatou; Pierre Grolet, Orgerus; Remi Reynard, Montesson, and Jean Thiery, Le Pecq, all of France, assignors to Institut Francais Du Petrole, Des Carburants et Lubriants

Filed June 20, 1972, Ser. No. 264,470
Claims priority, application France, Jan. 29, 1971, 71.23842
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.16 **7 Claims**



The invention relates to an apparatus for storing an elongated member, such as a flexible drill column.

This apparatus is constituted by an annular base plate on which the elongated member is coiled. This base plate is formed by a plurality of interconnected elements, each having substantially the shape of annular sector.

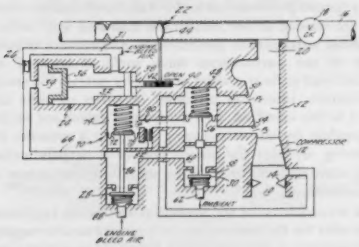
This base plate is operatively associated to guiding means and means for driving it in rotation, one of said means being stationary and the other solid with said base plate.

3,804,112

SURGE CONTROL FOR A COMPRESSOR

Kermit I. Harner, Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 20, 1972, Ser. No. 273,649
Int. Cl. F04b *49/00, 39/00*
U.S. Cl. 137—489 **6 Claims**



A rate sensor and control cooperating with a surge control senses the static pressure of the compressor diffuser and serves to assure that the compressor stays out of the surge condition in the event that there is a sudden decrease in the flow demand on the compressor. This device is characterized as having high gain and rapid response relative to the normal surge control whose response and gain characteristics are dictated by system stability and accuracy requirements.

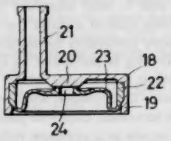
3,804,113

AUTOMATIC NON-RETURN VALVE

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed June 21, 1971, Ser. No. 154,885
Int. Cl. F16k *15/14*
U.S. Cl. 137—496 **1 Claim**

A non-return valve for fluids in which a yieldable diaphragm constitutes the movable wall of a resiliently preloaded valve. Elastomers and rubber are the materials which are preferred for the movable wall of the valve, with the valve body being



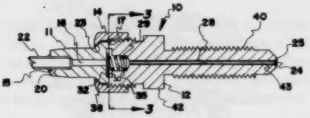
made also of a molded plastic material. An initial deformation is imparted to the resilient movable wall so as to have a preload available for the valve.

3,804,114

CHECK VALVE

Edward J. Morgan, Fond Du Lac, Wis., assignor to Brunswick Corporation, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,736
Int. Cl. F16k *15/02*
U.S. Cl. 137—515.5 **6 Claims**



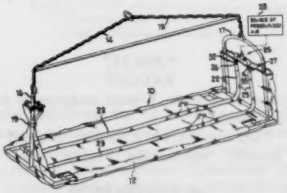
A low inertia, rapid response, low volume check valve utilizes two body members positioned in end-to-end alignment. The valve bodies have end faces which are clamped into sealing engagement with each other. A shallow cylindrical chamber is formed in one of the end faces and carries a very thin, disc like valve closure member which floats between a closed position against the face of the inlet body and an open position against the face of the outlet body. The closure member is relieved to permit fluid flow therearound and into depressions in the face of the outlet body. Preferably the outlet passage is formed by stainless steel tubing such as hypodermic tubing carried in the outlet body to provide an inexpensive outlet passage with a minimum of contained volume.

3,804,115

AIR SUPPLY MANIFOLD FOR A HYDROTHERAPY TREATMENT SYSTEM

Robert C. Miller, Elgin, and Carl K. Miller, Libertyville, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 28, 1971, Ser. No. 213,145
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **1 Claim**



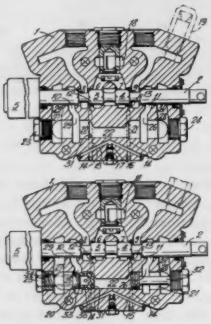
An air supply manifold is described having an outlet nozzle that may be attached to an apertured conduit or air tube, in-

tegrally formed in a flexible plastic film, in order that pressurized air may be channeled through the apertures in the conduit and then injected into the water of a hydrotherapy tank to effect agitation. The flexible conduit is inserted or slipped over the nozzle and is held attached by means of a snugly fitting elastic O-ring placed around the conduit and received in an annular groove formed in the nozzle. The radially inward pressure of the O-ring is sufficient to establish a connection between the conduit and nozzle which is air-tight at normal operating pressures. The conduit will, however, blow off of the nozzle at a predetermined blow-off pressure. In this way, the connection also serves as a pressure relief valve to protect the conduit against damage from excessive pressure.

3,804,116
HYDRAULIC VALVES

John Stephen Marshall, Woking, England, assignor to Sperry Rand Limited, London, England

Filed Jan. 10, 1973, Ser. No. 322,398
Claims priority, application Great Britain, Jan. 14, 1972, 1802/72
Int. Cl. F16k *11/00*
U.S. Cl. 137—596 **5 Claims**



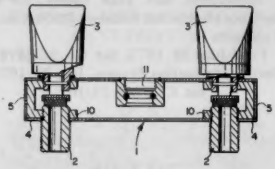
A spool type control valve provided with two bores arranged for the insertion of auxiliary valves, each bore having a port communicating with one of the outlet ports of the control valve pair, and each having a vent to tank, the inner ends of the bores being connected by a passageway. Preferably the vents to tank also communicate with ports in the control valve bore. If the outer ends of the two bores are sealed off by caps, the control valve has its outlet ports vented to tank and functions in the usual way. However, by inserting auxiliary valves in one or both bores, and in some cases also using a modified spool, the control valve functions with additional facilities, for example, the auxiliary valve may be a counterbalance valve in one or both sides of the circuit, a speed-limiting valve to control the maximum speed of movement of the load, a cross-line relief valve, or a valve to allow regenerative operation in a loader circuit.

3,804,117
FAUCET

Jean Collignon, Chamonix, France, assignor to Abraco S.A., Chamonix, France

Filed Apr. 21, 1972, Ser. No. 246,165
Claims priority, application France, Apr. 21, 1971, 71.16277
Int. Cl. F16k *19/00*
U.S. Cl. 137—606 **2 Claims**

A faucet comprises a body of rustproof material. Openings are provided in the body for inserting connectors of a readily machineable material different than the rustproof material. The connectors are machined to provide at least two fluid

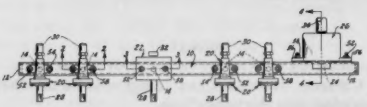


inlet means and a control valve for each fluid inlet means. After inserting the connector, the valve body is closed with a plate of the rustproof material.

3,804,118
GAS RANGE MANIFOLD WITH CONTROL VALVE MOUNTING MEANS

John J. Love, and Thomas P. Fleer, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 10, 1972, Ser. No. 252,059
Int. Cl. F16k *51/00*
U.S. Cl. 137—608 **8 Claims**



A fuel supply manifold for gas cooking ranges comprising a straight length of square tubing with closed ends and longitudinally spaced perforations in the wall thereof, screw-threaded studs are welded at one end to the manifold wall surface are positioned adjacent the perforations, and control valves positioned at the perforations have surfaces secured to the manifold wall in fluid-sealing relation by nuts on the studs. In a modification, internally threaded bushings or nuts are are welded to the manifold, and the control valves are secured to the manifold by screws engaging the nuts. A pressure regulator having an inlet for connection of a perpendicular fuel supply conduit is secured to the manifold wall at one of the end perforations.

In a second form of the invention a pressure regulator having an inlet for the connection of a perpendicular supply conduit is secured to the open end of a round manifold pipe by a bayonet latch.

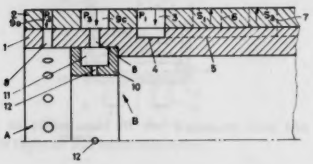
3,804,119
CONTROL EQUIPMENT FOR HYDROSTATIC OR HYDRAULIC SYSTEMS (II)

Helge Kajholm Christensen, Nordborg, Denmark, assignor to Danfoss A/S, Nordorg, Denmark

Filed Nov. 6, 1972, Ser. No. 304,145
Claims priority, application Germany, Nov. 16, 1971, 2156840
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.32 **7 Claims**

The invention relates to a control valve assembly for a hydrostatic control system such as a power steering assembly. A common control valve assembly of this type has relatively rotatable inner and outer elements connected respectively to a

vehicle steering wheel and a servomotor. Paired holes in the inner and outer elements permit the flow of fluid therethrough when the unit is in its neutral position with the paired holes in respective registration. In prior art units disturbing vibrations occur during the transition from the neutral position to a working position when the paired holes are moved out of registration. These vibrations are eliminated by making the holes



in the outer element of varying size and larger than the corresponding holes in the inner element so that a gradual or progressive reduction of the porting area takes place instead of the paired holes closing simultaneously. Also, a chamber having a flow restricting orifice is incorporated downstream from the holes of the inner element. This provides a sound absorbing system by means of which disturbing noises can be greatly reduced.

3,804,120

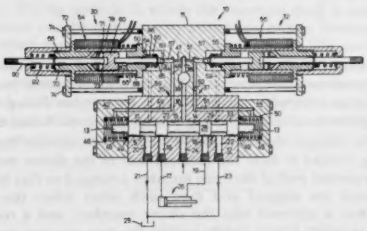
ELECTRICALLY OPERATED HYDRAULIC CONTROL VALVE

Bruce L. Garnett, Route 2, Depere, Wis.

Filed Dec. 26, 1972, Ser. No. 317,924

Int. Cl. F16k *11/07, 31/383*

U.S. Cl. 137—625.64 **10 Claims**



An electrically operated hydraulic control valve including a valve body having an open ended bore, an inlet passage, a pair of fluid flow passages and a return passage connected to said bore, a valve spool mounted in said bore to control the fluid flow from said inlet passage to said flow passages and return passages, and a solenoid controlled pressure circuit connected to control the position of the valve spool in the bore, said pressure circuit including a pressure reducing valve to maintain reduced pressure in the control circuit, and a pair of solenoid operated valves which are selectively operable to reduce the pressure at one end of the bore to allow the pressure at the other end of the bore to move the valve spool.

3,804,121

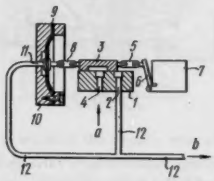
ELECTROMAGNETIC VALVE

Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181; Nikolai Ivanovich Anikanov, Bolshaya Bronnaya, ulitsa 2/6, kv. 6, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49 korpus 2 kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky Prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed Dec. 21, 1972, Ser. No. 317,430

Int. Cl. F16k *11/06*

U.S. Cl. 137—625.65 **1 Claim**



An electromagnetic valve is provided with means for returning a slide valve to an initial position in which a membrane located in the housing, provides an under-the-membrane cavity which communicates with a vacuum pipe linking the locking pair to the operating members of the machine.

3,804,122

HYDROSTATIC TRANSMISSION CONTROL WITH HYDRAULIC FOLLOW-UP

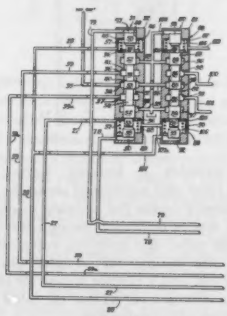
Charles A. H. Ruhl, Wheaton; Edward Meyer, North Riverside, and Probir K. Chatterjea, Des Plaines, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 97,899, Dec. 14, 1970, Pat. No. 3,693,503.

This application Mar. 16, 1972, Ser. No. 235,433

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.66 **1 Claim**



A hydraulic follow-up for use with a hydraulic system placed between a rotating input member and a rotating output member. The hydraulic system is a hydrostatic transmission for driving a tractor, and comprises a hydrostatic pump and a hydrostatic motor driven by the pump. When the hydrostatic pump is angularly shifted with respect to the input member, the shifting is controlled by the hydraulic follow-up, which also shifts the motor in relation to the output member.

3,804,123
HYDRAULIC VALVES

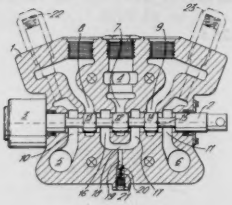
John Stephen Marshall, Woking, England, assignor to Sperry Rand Limited, London, England

Filed Jan. 10, 1973, Ser. No. 322,532

Claims priority, application Great Britain, Jan. 14, 1972, 1801/72

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.69 **3 Claims**



A hydraulic control valve having a valve spool sliding axially in a bore provided with a central port for connection to a high pressure supply, a pair of service ports for connection to a load and a pair of outlet ports, the spool having raised lands co-operating with the ports for admitting fluid under pressure to either one of the service ports and allowing it to escape from the other when the spool is moved from its neutral position.

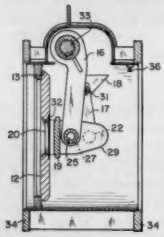
3,804,124
THREE LEVER VALVE WITH RELIEF PORT

Harry P. Finke, Pittsburgh; Hugh B. Carr, McMurray, and Carl D. Wilson, Coraopolis, all of Pa., assignors to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed Oct. 12, 1972, Ser. No. 296,823

Int. Cl. F16k *1/20*

U.S. Cl. 137—630.14 **2 Claims**



The valve includes a housing having an opening therethrough, a valve seat positioned about the opening and a valve disc positioned within the opening to engage the valve seat. The valve disc is operated through three levers which parallel move the valve disc from the valve seat initially and then rotate the disc through 90°. A relief port is positioned within the valve disc and a closure means for the relief port is connected to the central lever so that the relief port is opened prior to the opening of the valve disc.

3,804,125
PUMP PULSATION DAMPENER

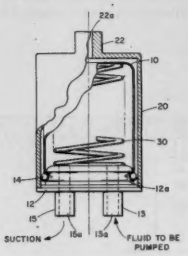
George B. Sonneman, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 28, 1972, Ser. No. 292,931

Int. Cl. F16l *55/04*

U.S. Cl. 138—30 **4 Claims**

A gas tight housing has a first port communicating ambient air with a first interior chamber and second and third ports respectively communicating the suction line of a pulsating pump and the gas to be pumped with a second interior chamber. An elastomer bag separates the interior portion of the housing into the first and second chambers thereby sealing the chambers gas tight from one another. A spring within the



elastomer bag expands the sleeve to thereby expand the second chamber and to contract the first chamber. The spring force is opposed by atmospheric pressure in the first chamber. In operation the elastomer bag remains partially collapsed, collapsing further during the pump suction stroke and expanding in the interval between suction strokes.

3,804,126
PLUG DEVICES

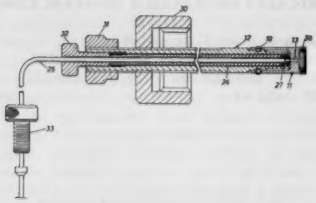
Willi-Gunter Haferer, Stafford, England, assignor to James A. Jobling & Company Limited, Sunderland, England

Filed Aug. 14, 1972, Ser. No. 280,171

Claims priority, application Great Britain, Aug. 16, 1971, 38,350/71

Int. Cl. F16l *55/12*; **B65d** *39/12*

U.S. Cl. 138—89 **12 Claims**



A plug device, such as a closure member for a chromatography column, comprises a hollow deformable sleeve member having an internal screw thread, a body member fitting within the sleeve member and having an external screw thread engaging the internal thread of the sleeve member, annular recesses being formed in both the internal wall of the sleeve member and external wall of the body member arranged so that the two recesses are aligned and face each other when the body member is screwed into the sleeve member, and a resilient ring member fitting tightly within the two recesses so as to urge the sleeve member outwardly around the annular recesses to form a tight seal when located in a surrounding tube and to resist unscrewing of the body member from the sleeve member.

3,804,127
HAND LOOM

Roland Rose, 1010 N.W. 8th St., Andrews, Tex.

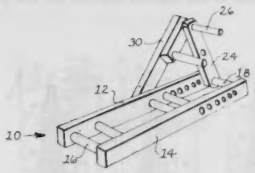
Filed May 14, 1973, Ser. No. 360,004

Int. Cl. D03d *29/00*

U.S. Cl. 139—34 **14 Claims**

A hand loom for handicraft weaving includes a basic frame with two side bars, cloth beam, heddle beam and back beam.

An upper warp beam and lower warp beam are mounted upon a swing leg which is braced by a brace leg. The swing leg may



be swung to either side of the frame so that the loom is adapted for right or left hand operation.

3,804,128

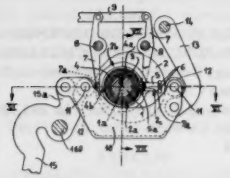
DOBBY FOR LOOMS

Lucien Amigues, 25, avenue Gabriel Peri, Vincennes, France

Filed Nov. 14, 1972, Ser. No. 306,187

Int. Cl. D03c *1/00*

U.S. Cl. 139—66 R **5 Claims**



A dobby for looms of the type in which an arrangement of actuating members or amplifier relays which is interposed between a reading device and pulling levers is controlled by a common shaft to which in use a cyclic rotary motion is imparted. Each member comprises a profiled cam loosely mounted on the common shaft and provided with a sliding cotter. During periods in which the common shaft is stopped, the cotter can be displaced by either one of two pivoting fingers which are controlled by the reading device. The control is such as to ensure that either the shaft and cam are prevented from rotating relative to each other, or the cam cannot be moved. A moving part is provided which supports a roller held in contact with the periphery of the cam, the moving part being attached to the corresponding pulling lever.

3,804,129

FILLING THREAD STOP MOTION DEVICE FOR A SHUTTLELESS WEAVING MACHINE

Oskar Bernath, Umiken, Switzerland, assignor to George Fischer AG Brugg, Brugg, Switzerland

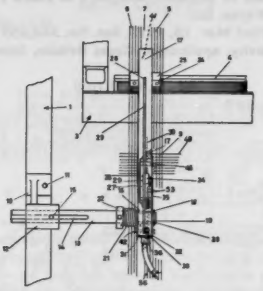
Filed Nov. 24, 1971, Ser. No. 201,805

Claims priority, application Switzerland, Nov. 27, 1970, 17584/70

Int. Cl. D03d *51/34*

U.S. Cl. 139—370 **6 Claims**

A filling thread stop motion device for shuttleless weaving machines with filling thread supply packages situated outside of the warp shed and a thread feeler sensing needle which is to be woven-in in front of each pick and thereafter withdrawn from the cloth in the rhythm of the lay movement, the thread feeler sensing needle being movably borne in a housing and operatively connected to a control switch that is actuated according to the position of the needle, whereby the housing is pivotably borne to cause a plunging movement of the needle in accordance with the movement of the lay.



3,804,130

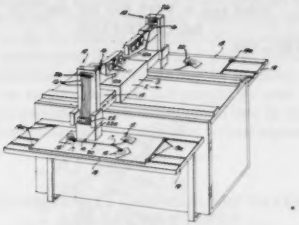
FORM BOARD FOR RECEIVING AND REMOVABLY RETAINING STRAND MATERIAL

John W. Tarbox, Malibu; Walter E. Hinds, Los Angeles, and Rodolfo Castro, La Palma, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 103,233, Dec. 31, 1970, Pat. No. 3,699,630. This application July 24, 1972, Ser. No. 274,158

Int. Cl. B21f *27/00*

U.S. Cl. 140—92.1 **22 Claims**



A wire dispensing system provides for ordered dispensing and forming of wires along predetermined paths to produce cables and including automating the production of cable harnesses. A wire dispensing head is controlled to selectively dispense wires from a group of supply spools, laying the wire along predetermined paths according to the desired harness pattern configuration, cutting the wires to conform to the individual path lengths, and securing the wires at respective termination sites. The wire dispensing head includes feed tubes selectively actuated to secure the wires at the termination sites wherein movements of the dispensing head are controlled to accurately move the selected feed tubes along the paths determined by the harness pattern configuration. The desired length of an individual precoded wire is determined by optically sensing the configuration of a wire mark which controls wire pay-out by a rotatable capstan while the feed rate tension of the wires is regulated by the same capstan at a low level capable of accurately locating the wires along the wire layout paths of the cable harness wherein the tension is regulated so as not to exceed the level of wire retention at the termination sites. The termination sites include openings having resilient retaining means comprising a slit pattern in neopreme at each opening for receiving the end portion of a feed tube and retaining wires on withdrawal of the feed tube.

3,804,131

WIRE SKEINING APPARATUS

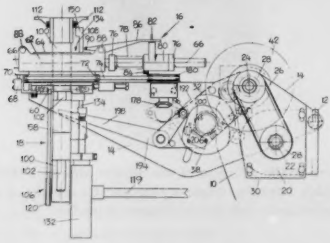
Frank Robert Edwin Holmes, Syston, and John Tite, Hugglescote, both of England, assignors to Essex International Inc., Fort Wayne, Ind.

Filed Mar. 16, 1973, Ser. No. 342,059

Claims priority, application Great Britain, Mar. 22, 1972, 13458/72

Int. Cl. B21f *3/00*

U.S. Cl. 140—92.2 **11 Claims**



Skein winding apparatus for wire coil winding machines has a rotatable arrangement of spaced projections for initially folding wire and has associated with it a device for twisting the folded wire intermediate the spaced elements. The apparatus forms interlocked wire skeins quickly.

3,804,132

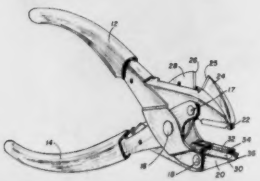
BOW FORMING PLIER

Henry Mann, Huntingdon Valley, Pa., assignor to Henry Mann, Inc., Feasterville, Pa.

Filed Aug. 8, 1973, Ser. No. 386,753

Int. Cl. B21f *1/06*

U.S. Cl. 140—106 **4 Claims**



This invention pertains to a parallel jaw plier having a pair of wire cutters manipulated by the opening and closing of the handles. The jaws of the plier are operated in a parallel manner to move complementary configurations formed in the jaws whereby the ends of the wire may be bent into closed or open loops or bayonet stops to provide a precise configuration and a series of like sized loops in the wire. The jaws are so constructed that the wire which is to be bent may be made as an offset bend or bayonet stop or a start of the bow. The jaws are particularly adapted so that wires may be formed into an outer bow loop which may be either a closed or open loop.

3,804,133

BOTTLE PURGING METHOD

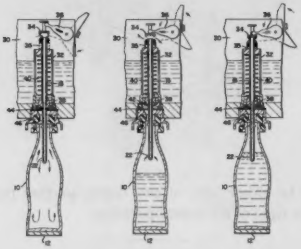
Bruce G. Copping, Akron, Ohio, assignor to A-T-O Inc., Cuyahoga Falls, Ohio

Filed Dec. 7, 1971, Ser. No. 205,602

Int. Cl. B67c *3/10, 3/28;* B67d *5/02*

U.S. Cl. 141—6 **2 Claims**

A method of filling a container with beer including the step of purging the container with a volume of gas, primarily carbon dioxide, greater than the volume of the container when the container is open to the atmosphere, immediately thereafter sealing the container, and supplying counterpressure gas to the container. The method may include using up to about 2.5 volumes of the carbon dioxide for the purging action, and directing the stream of purging gas downward from the container on the central axis thereof. Carbon dioxide is used as the counterpressure gas and normally is supplied from a counterpressure chamber. Fresh carbon dioxide gas is fed into the counterpressure gas supply chamber to maintain a desired carbon dioxide concentration therein.



3,804,134

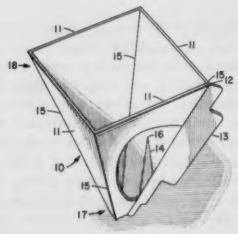
COLLAPSIBLE FUNNEL FOR DISPENSING LIQUIDS FROM PUNCTURABLE CONTAINERS

Frank J. Wehking, Houston, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed Aug. 17, 1972, Ser. No. 281,352

Int. Cl. B65b *39/00;* B67c *11/00*

U.S. Cl. 141—98 **8 Claims**



A collapsible funnel for dispensing liquids from puncturable containers comprising: a plurality of triangular sections each of which is joined to at least one other triangular section, a seam means, a handle means, and a blade means positioned so that said puncturable containers when positioned inside the collapsible funnel are punctured and the liquids dispensed.

3,804,135

ADJUSTABLE VOLUME PRESSURE-FILL CONTAINER FILLING MACHINE

Chester E. Waxlax, Moon Twsp., Pa., assignor to Horix Manufacturing Company, Pittsburgh, Pa.

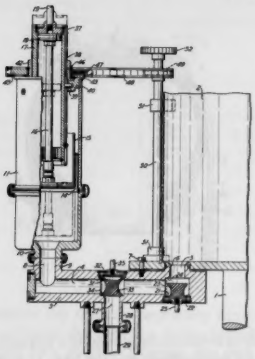
Filed Sept. 27, 1971, Ser. No. 183,996

Int. Cl. B67c *3/28;* B65b *65/02*

U.S. Cl. 141—266 **5 Claims**

A plurality of circumferentially spaced vertical liquid product dispensing cylinders are arranged for movement in a circular path. Each cylinder has an inlet and outlet for liquid product in its lower end and contains a vertically movable

fluid pressure cylinder, in which there is a piston connected by a downwardly extending rod to a head at its lower end. The head fits within a cup-shaped flexible diaphragm, the edge of which is sealed to the side of the dispensing cylinder. The diaphragm forms the upper wall of a product chamber in the



dispensing cylinder. Each fluid pressure cylinder can be vertically adjusted individually in the surrounding dispensing cylinder, and also all of the fluid pressure cylinders can be adjusted simultaneously a uniform distance to change the volume of the product chambers.

3,804,136

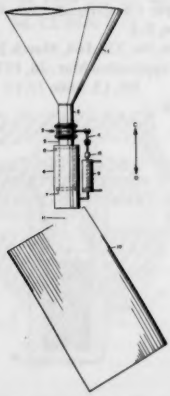
AUTOMATIC UNLOADING SPOUT

Ely Knox Thomson, Houston, Tex., assignor to Continental Carbon Company, Houston, Tex.

Filed Sept. 25, 1972, Ser. No. 292,226

Int. Cl. B65b 1/06

U.S. Cl. 141—284 **7 Claims**



A container-filling device featuring two concentric tubes mounted under a storage bin for dry particulate solids. The outer tube, which is slideable on the inner tube, is lowered into the container by an air cylinder which also actuates a lever opening the valve to the bin. When the container is full, the flow of material stops and the air cylinder actuates the lever to close the valve and then continues its upward movement to lift the outer tube out of the container.

3,804,137

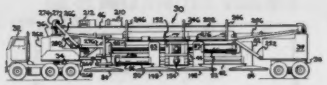
TREE HARVESTING MACHINE OF A WALKING TYPE

Bruce J. McColl, P.O. Box 237, Whitby, Ontario, Canada

Filed Jan. 10, 1972, Ser. No. 216,412

Int. Cl. A01g 23/08

U.S. Cl. 144—3 D **20 Claims**



A tree harvesting machine, comprising a mobile platform of the walking type integrated with an automated tree processing unit for use on roadless terrain. The mobile platform comprises a horizontal boom assembly, including a power unit rotationally suspended at one of its extremities with a control unit rotationally suspended at the other, the boom assembly being rotationally mounted on a carriage which also mounts upper and lower body members having retractable legs with foot pads, each of the two body members being able to be moved translationally and rotationally with respect to each other by the carriage means. The paths of travel of each body member lie in a separate plane with the travel plane of one member being spaced vertically from the travel plane of the other. While one member is executing a movement with its foot pads elevated, the vehicle is stably supported by the foot pads of the other member which remain in contact with the ground. The body members alternate between traveling and supporting modes. The body members are basically T-shaped or triangular with the leg members depending from their extremities. Integrated with the boom assembly is a tree harvesting unit capable of severing a tree trunk from its stump, delimbing the trunk, topping the trunk, transferring the trunk to a storage cradle for holding a plurality of tree trunks and subsequently discharging the trunks in a group. Preferably, the laterally extending portions of the mobile platform are foldable along its longitudinal axis and removable road wheel assemblies are provided so that the machine may be readily converted into a configuration suitable for normal highway travel.

3,804,138

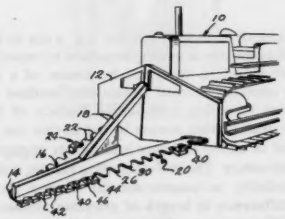
DOZER-TYPE CLEARING BLADE HAVING REPLACEABLE TEETH

James F. Adcock, Box 271, Queen City, Tex.

Filed Feb. 21, 1973, Ser. No. 334,286

Int. Cl. A01g 23/08

U.S. Cl. 144—34 F **7 Claims**



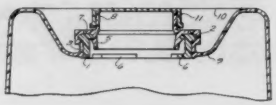
This invention is related to an improved toothed dozer clearing blade having teeth that are replaceable, exchangeable, and reversible so as to compensate for uneven wear as well as decrease cost in rebuilding worn blades.

3,804,139

CONTAINER OF SYNTHETIC PLASTIC MATERIAL

Otfried Kimm, Cologne, Germany, assignor to Mauser Kommanditgesellschaft, Cologne, Germany

Filed Feb. 8, 1973, Ser. No. 330,869
Int. Cl. B65d *25/40, 41/04*
U.S. Cl. 150—.5 7 Claims



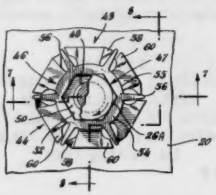
A container of synthetic plastic material has a circumferential wall and a transverse end wall provided with an opening which is bound by an outwardly extending substantially cylindrical neck having an outer open end. A support ring is frictionally received in the neck and includes a cylindrical portion which is provided adjacent the outer end of the neck with an inwardly projecting circumferential bead and with an outwardly projecting circumferential bead which latter is embedded in the material of the neck. An annular spout is partly received within the ring in sealing and supporting engagement with the inwardly projecting circumferential bead thereof.

3,804,140

SELF-ANCHORING CONSTANT PRELOAD DEVICE AND METHOD

Paul W. Harper, 125 Lenore Ln., Centereach, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,345
Int. Cl. F16b *39/24*
U.S. Cl. 151—52 8 Claims



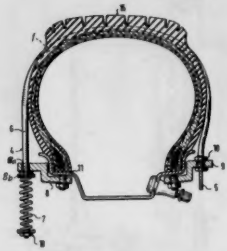
A conventional threaded member, e.g. a nut or bolt, which loosens with respect to a mating structure by reason of thread yield or elongation, is tightened by means of a continuous torque and constant preload device and method capable of self-anchoring to a flat, unmodified surface of the mating structure so that biasing means in the device can rotate the conventional threaded member into tighter engagement with the mating structure. The self-anchoring means, achieving sufficient immobility to counteract the biasing means either through a difference in length of effective moment arms, or through a difference in coefficients of friction, or both, allows the biasing means to impart rotation to the conventional threaded member without requiring the mating structure to be specially formed to assist in anchoring and thus the constant preload device is of universal application wherever threaded fasteners are used. A constant excursion value is thus maintained, whereby the effective life span of the conventional threaded member is increased.

3,804,141

TIRES FOR AUTOMOBILES AND LIKE VEHICLES

Franz Huttner, Zobelsreutherstr, 36, 8670 Hof, Germany

Filed May 4, 1972, Ser. No. 250,327
Claims priority, application Germany, May 4, 1971, 2122009
Int. Cl. B60c *27/02*
U.S. Cl. 152—208 18 Claims



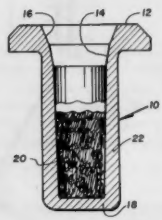
The invention concerns improved tire structures, in particular for use with automobiles and the like. The tire is equipped with non-skid or antislipping means, which are regulatable in their position relative to the tire surface and if desired, may be locked and maintained in their operative location until they are released therefrom. A manipulation of predetermined non-skid element or elements may be had, so that the latter are gradually brought into different effective location or locations relative to the tire surface and afford the desirable antislipping result commensurate with the prevailing conditions of the road, autobahns and the like, as well as in accordance with the feel and own volition of the driver. Bowden or other mechanical, electrical or pneumatic power transmission means are employable to regulate, adjust, lock or release the skid elements by the driver from within the vehicle and during vehicular traffic.

3,804,142

TIRE STUD

Charles J. DeCaro, Chesterland, Ohio, assignor to Textron, Inc., Providence, R.I.

Division of Ser. No. 238,164, March 27, 1972, Pat. No. 3,749,146. This application Mar. 26, 1973, Ser. No. 344,721
Int. Cl. B60c *11/16*
U.S. Cl. 152—210 3 Claims



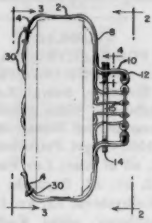
An improved tire stud including a head portion and a shank portion is closed by a relatively thin end portion. A blind bore extends from an opening in the head portion through the shank to the end portion. Bonded particulate abrasive material fills at least a part of the bore adjacent the end portion. A method for making the tire stud is disclosed.

3,804,143

TIRE ANTI-SKID DEVICE

Palmer E. Burris, Jr., 916 145th Pl., Bellevue, Wash.

Filed Mar. 17, 1972, Ser. No. 235,601
Int. Cl. B60c 27/12
U.S. Cl. 152—225 **3 Claims**



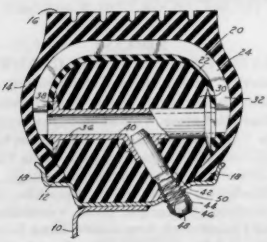
A motor vehicle tire traction improving device adapted to be quickly attached to the tire. The device includes a plurality of relatively stiff loop members having one end secured to a stiff ring. Each of the loops, designed to be tire contacting is adapted to be secured over the outer periphery of the tire thus presenting a gripping means which overlies the tread for improving the traction of the vehicle. The plurality of loops are secured to the tire by a fulcrum hoop located upon the outside of the tire when in operational position and adapted to place a compressive force upon the loops holding them in position upon the tire. The fact that the traction improving device may be secured to the tire without need for securement upon the inside of the tire makes the device quick and easy to use.

3,804,144

TIRE CONSTRUCTION

Robert T. Sand, Sr., 5220 McClellan Ave., Detroit, Mich.

Filed Aug. 17, 1972, Ser. No. 281,449
Int. Cl. B60c 7/12
U.S. Cl. 152—313 **7 Claims**



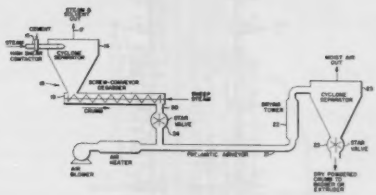
A non-pneumatic tire comprising a tire casing and rim assembly with a relatively solid filler for the casing comprised of an annular resilient filler having transverse ribs extending around the outer surface and connected to air chambers adjacent the rim to allow air flow from the tread portion of the tire to the inside diameter areas to equalize temperatures. One embodiment includes segmental metal portions comprising part of the filler to support an outer annular resilient ribbed filler element.

3,804,145

PROCESS FOR THE ISOLATION AND RECOVERY OF POLYMERS

Kenneth R. Arnold, and Robert W. Frischmuth, Jr., both of Redondo Beach, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 46,075, June 15, 1970, abandoned. This application Oct. 20, 1972, Ser. No. 299,498
Int. Cl. B01d 1/16, 1/22; F26b 3/12
U.S. Cl. 159—48 R **7 Claims**



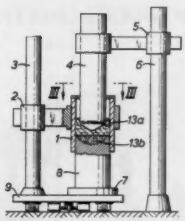
A process for the isolation and recovery of a polymer in powder form from its solution is provided.

3,804,146

PROCESS FOR CONTROLLING POSITION OF ELECTRODE IN ELECTROSLAG REMELTING MOLD

Geoffrey Hoyle, Sheffield, England, assignor to The British Iron and Steel Research Association, London, England

Filed May 10, 1972, Ser. No. 251,888
Claims priority, application Great Britain, May 21, 1971, 16272/71
Int. Cl. B22d 27/02
U.S. Cl. 164—4 **3 Claims**

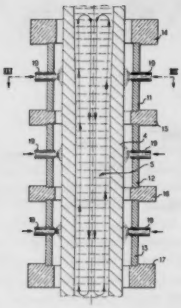


A process for the refining of metals in which a consumable electrode of the metal to be refined is melted in a vessel which comprises detecting changes in the clearance between posed surfaces of the consumable electrode and the vessel inner wall to produce a control signal to impart relative horizontal movement between the electrode and the vessel to restore the clearance.

3,804,147
CONTINUOUS ROTARY METHOD OF CASTING METAL UTILIZING A MAGNETIC FIELD

Louis Babel, Sauvigny-Les-Bois, and Michel Mola, Paris, both of France, assignors to Societe Civile d'Etudes de Centrifugation, Paris, France

Filed Mar. 30, 1971, Ser. No. 129,362
Int. Cl. B22d *27/02, 11/12*
U.S. Cl. 164—49 **5 Claims**

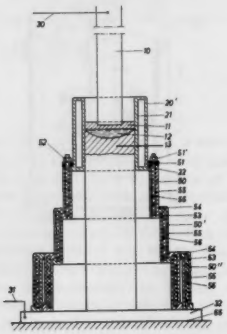


Steel blanks or billets are cast by the continuous rotary casting method by effecting in the moulten core of the blank or billet an axial circulation of the liquid metal. This circulation is created by electromagnetic fields induced by inductors which surround the blank or billet. The circulation is downwards near the axis of the blank or billet and upwards along the walls or skin of the blank or billet.

3,804,148
APPARATUS FOR ELECTROSLAG-REMELTING OF METALS, IN PARTICULAR, STEEL

Adolf Schneidhofer, Hermann Lonsgasse 27, 8605 Kapfenberg, Austria

Division of Ser. No. 72,783, Sept. 16, 1970, abandoned. This application June 19, 1972, Ser. No. 264,309
Claims priority, application Austria, Sept. 18, 1969, 8826/69
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **2 Claims**

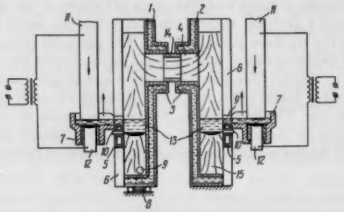


Apparatus for heating steel ingots produced in an electroslag-remelting process. An electrode consisting of a steel of predetermined composition is remelted in an electroslag-remelting process. A slag composition is stored in a water-cooled mold and the electrode is inserted into this slag composition and an electric current is passed through the electrode thereby melting it. The molten metal settles in the mold and solidifies therein. A base plate supports the ingot formed by the solidification of the molten metal in the mold while the distance between the top of the slag layer and the top of the molten metal remains constant by increasing the distance between the mold and the base plate, thereby causing the solidified metal to exit from the mold as a solidified metal ingot. Means are provided for heating the exposed surfaces of the metal ingots exiting from their molds.

3,804,149
APPARATUS FOR ELECTROSLAG MELTING OF SHAPED INGOTS

Boris Izrailevich Medovar, bulvar Lesi Ukrainki; Rudolf Solomonovich Dubinsky, ulitsa Politekhnicheskaya, 5, kv. 209; Georgy Alexandrovich Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106; Sergei Petrovich Egorov, ulitsa Nevskaya, 34, kv. 1, all of Kiev; Lev Vasilievich Popov, ulitsa Kharkovskaya, 2, kv. 21, Bryansk; Vladimir Nikolaevich Strukov, ulitsa Kuibysheva, 13, kv. 17, Bryansk; Stanislav Stepanovich Antsiferov, ulitsa Kuibysheva, 11, kv. 1, Bryansk, and Anatoly Petrovich Kulikov, ulitsa Mayakovskogo, 28, Bryansk, all of U.S.S.R.

Filed Dec. 27, 1972, Ser. No. 319,056
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **3 Claims**



The apparatus for electroslag melting of shaped ingots has two similar crystallyzers with melting vessels mounted on slides travelling in the slots provided in the crystallyzers, each of the crystallyzers having a throat at its wall, and the two throats adapted for forming a link member in an ingot are arranged coaxially with each other and communicate upon joining the crystallyzer cavities. One of the crystallyzers is movably mounted along the geometrical axis of these throats and are turnable about the horizontal axis which is below the throat axis and normal to it.

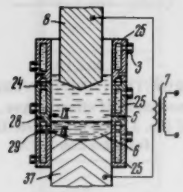
3,804,150
APPARATUS FOR ELECTROSLAG REMELTING

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 5, kv. 21; Boris Izrailevich Theddvar, bulvar Lesi Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14; Leonty Vasilievich Chekotilo, ulitsa Scherbakovke, 49a, kv. 10; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5; Vasily Ivandvich Us, ulitsa Saxaganskogo, 58, kv. 12; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Viktor Mikhailovich Martyn, ulitsa Vernadskogo, 65, kv. 102; Viktor Leonidovich Artamonov, ulitsa Sovskaya, 9, kv. 4; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34; Georgy Alexandrovich Boiko, ulitsa 6, Libedskaya, 16, kv. 106; Anatoly Konstantinovich Tsikulenko, ulitsa Babushkina, 23, kv. 38; Vasily Vladimirovich Ivon, Darnitskol shosse, 107/2, kv. 16, and Leonid Viktorovich Pavlov, Borschagovskaya ulitsa, 234, kv. 6, all of Kiev, U.S.S.R.

Division of Ser. No. 125,744, March 18, 1971. This application Mar. 8, 1973, Ser. No. 339,069
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **2 Claims**

A method of electroslag remelting of consumable electrodes characterized in that the agents improving the quality

of the ingot are blown into the melt so that the injected flows of these agents cause rotation of this melt. A mould for electroslag remelting of consumable electrodes in the process of simultaneously blowing agents to the melt which improve the quality of the ingot, the mould being provided with at least one nozzle for blowing the agents into the melt, in which case the



longitudinal axis of said nozzle is inclined to the walls of the mould under an angle other than a right angle. A consumable electrode provided with a nozzle for blowing agents into the melt to improve the quality of the ingot, which nozzle is made is the form of a coil wound on the electrode and made of the material being melted.

3,804,151

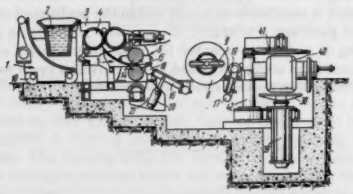
PLANT FOR PRODUCING SHEET METAL BLANKS FROM LIQUID METAL

Vladimir Vasilievich Barsukov, ulitsa Bogatogo, 39/41, kv. 24; Savely Leonidovich Burakov, Treugolny pereulok, 13, kv. 23; Vladimir Vissarionovich Grebennikov, ulitsa R.Ljuxemburg, 4, kv. 12; Petr Georgievich Kalashnikov, ulitsa 25 Chapaevskoi divizii, 10, korpus 2, kv. 23; Miron Vasilievich Krasnov, doroga Kotovskogo, 191, kv. 5; Alexandr Yankelevich Kuperman, ulitsa Tomasa, 4, kv. 9; Evgeny Emelyanovich Mikotin, ulitsa Gaidara, 37, kv. 12; Evgeny Grigorievich Nikolaenko, ulitsa Lastochkina, 9, kv. 9; Alexandr Nikolaevich Stepanov, ulitsa Sverdlova, 97, kv. 68; Georgy Grigorievich Isarev, ulitsa Bogatogo, 39, kv. 9; Grigory Abramovich Yarovinsky, Treugolny pereulok, 13, kv. 14, and Dolya Iosifovich Yassky, ulitsa Zaslavskogo, 5, kv. 6, all of Odessa, U.S.S.R.

Filed Apr. 3, 1972, Ser. No. 240,749

Int. Cl. B22d *11/12*

U.S. Cl. 164—263 **6 Claims**



A plant is disclosed, said plant comprising: a pouring device, a receiving-distributing device, rolls for crystallization of a liquid metal into a strip, a strip remover, a device for cutting the strip into sheets, a conveying device, a sheet plier and a device for reeling the strip in a coil.

3,804,152

LOW PRESSURE DIE CASTING APPARATUS

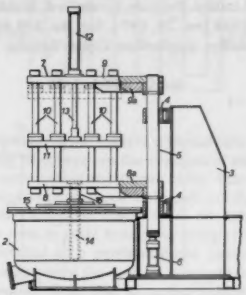
William Joseph Cook, Greenford, and Jon Erik Marius Carlsen, Newport, both of England, assignors to DIMO Holdings Limited of Llandowlais Works, Cumbran, Monmouthshire, England

Filed July 3, 1972, Ser. No. 268,903

Claims priority, application Great Britain, July 1, 1971, 30847/71

Int. Cl. B22d *17/06*

U.S. Cl. 164—306 **15 Claims**



A low pressure die casting apparatus has one or more furnaces each with a feed duct through the cover, through which molten metal is forced by gas pressure. A die placed in cooperation with a feed duct thereby receives a charge of metal. The entire die mounting structure is arranged to be movable relative to the or each furnace in separate vertical and horizontal modes so that a die can be raised clear and to one side of an associated furnace. The die mounting structure and/or furnace may be movable and the horizontal motion is conveniently made by pivoting about a vertical axis.

3,804,153

DEVICE FOR POSITIONING AND HOLDING A LENS MOUNTING BLOCK MOLD

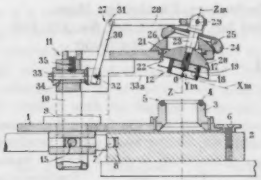
Luc Andre Tagnon, Saint Maude, France, assignor to Essilor International (Compagnie Generale d'Optique), Paris, France

Filed Sept. 28, 1972, Ser. No. 292,975

Claims priority, application France, Sept. 29, 1971, 71.35050

Int. Cl. B22d *19/00*; B29d *11/00*

U.S. Cl. 164—332 **7 Claims**



This device for positioning and holding in the proper location, on the convex face of an ophthalmic lens, a mold for casting, on said lens face, a metal block or gland permitting the subsequent mounting of the lens equipped with said metal block in a predetermined position on the spindle of a spectacle lens trimming and/or bevelling machine, comprises a base plate carrying a circular seat having its axis coincident with the sighting axis along which the lens is observed for position-

ing same and superposed to the fixed image of a reference cross-line centered to said axis; a mold support movable in relation to said base plate from a seat clearing position permitting the observation of the lens along said sighting axis to a molding position in which the mold can be brought into direct contact with the convex face of the lens.

3,804,154

HEATING SYSTEMS AND HEATER UNITS THEREFORE

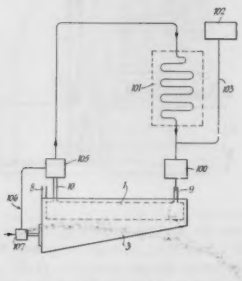
David Asdell, Beaconsfield, and John R. Mascall, Harrow Weald, both of England, assignors to Churchill Instrument Company Limited, Perivale, Greenford, Middlesex, England

Filed Dec. 20, 1971, Ser. No. 209,895

Claims priority, application Great Britain, Jan. 1, 1971, 109/71

Int. Cl. F28d *15/00*

U.S. Cl. 165—1 **4 Claims**



An oil heater unit which comprises a chamber through which oil is intended to flow; a closed vessel mounted in a wall of the chamber, the vessel having a first portion situated inside the chamber and a second portion situated outside the chamber and being so arranged that material contained in the vessel can flow from the first portion to the second portion; a heater device for heating the second portion of the vessel; and wherein the vessel contains a heat transfer material which is adapted to wholly or partially vaporize in the closed vessel when the second portion thereof is heated whereby the vapor transfers heat to the first portion of the vessel by which the chamber and oil flowing therethrough is adapted to be heated at least to a temperature substantially consistent with the temperature of the latent heat of vaporization of the heat transfer material under the pressure conditions determined within the closed vessel.

3,804,155

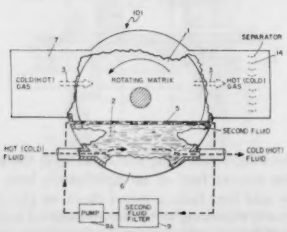
GAS-LIQUID PERIODIC HEAT EXCHANGER

Leon R. Glicksman, Peabody, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 24, 1973, Ser. No. 326,314

Int. Cl. F28d *19/00*

U.S. Cl. 165—1 **8 Claims**



A gas-liquid periodic heat exchanger wherein evaporation of the liquid into the gas is minimized. The heat exchanger contains a rotating disc or other matrix which alternately contacts the liquid and the gas and thereby transfers heat from one fluid medium to the other. The surface of the matrix is treated to prevent the liquid from wetting the surface of the matrix as it passes from the liquid to the gas, thereby eliminating evaporation of the liquid into the gas.

3,804,156

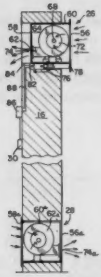
AIR DISTRIBUTION AND CONTROL SYSTEM

George A. McDonough, 1501 Hinman Ave., Evanston, Ill.

Filed Jan. 31, 1972, Ser. No. 222,086

Int. Cl. F25b *29/00*

U.S. Cl. 165—27 **8 Claims**



An air distribution system for circulating heated, cooled or otherwise conditioned air between first and second adjacently disposed rooms separated from each other by a partition. The preferred form of system includes one or more forced air blowers disposed in the partition between the rooms for forcing air from the first room into the second room and returning it to the first room in response to the condition of a control device disposed in the second room. Preferably, the blowers are disposed adjacent the top and bottom portions of the partition, temperature conditions in the first room are controlled by a combination heating and air conditioning unit having an associated thermostatic control, and the blowers circulate the treated air in the second room under the control of their own thermostat.

The preferred form of blower unit is a unitary assembly having an outer case with a grille on each end, and one or more squirrel cage blowers with an operating motor disposed in the case, which is receivable as a unit within the preformed opening in the partition. Preferably, the unit also includes an electrical plug or connector adapted for engagement with a counterpart electrical socket disposed in the partition upon movement of the unit in the direction of installation.

3,804,157

DAMPER CONSTRUCTION

Norman B. Wenig, 39 Herkimer Rd., Scarsdale, N.Y.

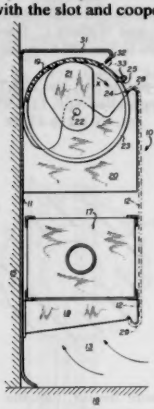
Filed Apr. 18, 1972, Ser. No. 245,101

Int. Cl. F24h *19/08*

U.S. Cl. 165—55 **4 Claims**

A damper construction for a convection heat exchanger in which the effective opening of a hot air outlet slot can be

varied by rotating a cylindrically curved damper element that extends lengthwise with the slot and cooperates with adjacent



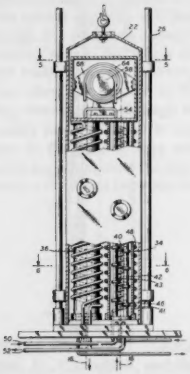
wall surfaces to establish laminar air flow for improved heat output.

3,804,158

RAPID WARMUP FURNACE FOR PROCESSING ELECTRON DISCHARGE DEVICE CATHODES

Donald R. Kerstetter, and John J. Regec, both of Emporium, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,615
Int. Cl. F25b *29/00*
U.S. Cl. 165—61 **5 Claims**



The disclosed furnace comprises two spaced apart vertical heat runs for processing electron discharge device cathodes carried by thin strip material. Each of the vertical heat runs comprises a heating coil through which the strip material passes. The heating coils are surrounded by tubular jackets such as copper sleeves which are water cooled. At the uppermost portion of the heat runs a water cooled pulley is provided for the strip. Controlled atmospheres can be provided within the heat runs.

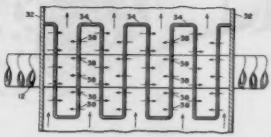
While the invention is not so limited it is particularly applicable to the processing of cathode ray tube cathodes which comprise a cathode sleeve which is generally circular and hollow and which is closed at one end by a cathode cap. It is generally the cathode cap which is attached to and carried by the strip. The material is generally nickel or a nickel alloy.

3,804,159

JET IMPINGEMENT FIN COIL

Edward F. Searight, Harvard, and Pierre J. Brosens, Belmont, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed June 13, 1972, Ser. No. 262,235
Int. Cl. F28f *13/02, 1/38*
U.S. Cl. 165—109 **14 Claims**



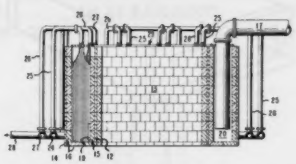
A heat exchanger in the form of a finned tube configuration for transferring heat between the contents of the tube and the atmosphere surrounding the finned tube. The tube may actually be made up in numerous multi-path configurations. The fins preferably extend outwardly from the tube and are attached to the tube in good heat-conducting relationship. The fins are perforated in a predetermined pattern to provide openings through which the outside atmosphere is directed as jets upon portions of the fins in such a fashion as to disrupt boundary layers normally existing adjacent the surfaces upon which the jets impinge.

3,804,160

FLUID HEAT EXCHANGE SYSTEM

Earl L. Kendrick, and Harry W. Sandberg, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 40,584, May 26, 1970, Pat. No. 3,662,817. This application Aug. 17, 1971, Ser. No. 172,435
Int. Cl. F28g *9/00*
U.S. Cl. 165—145 **26 Claims**



The use of a plurality of heat exchange bundles, each comprising a plurality of tubular elements made from an organic polymeric composition and disposed serially in a narrow channel through which a heat exchange fluid flows in a manner such that substantially all of the flowing heat exchange liquid comes into contact with the tubular elements of each bundle before passing to the next bundle, thereby developing a temperature gradient in the fluid within the channel, provides a heat exchange system which is particularly useful in cooling hot process streams.

3,804,161

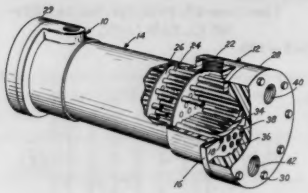
NON-METALLIC HEAT EXCHANGER

Leon J. Nowak, Jackson, Mich., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,242
Int. Cl. F28f *9/02*
U.S. Cl. 165—158 **4 Claims**

A heat exchanger made from fiberglass reinforced plastic includes a pair of end modules interconnected by metal tubes

and a cylindrical, encapsulating shell. Headers fit over the outside ends of the end modules and include manifolds for direct-



ing one of the fluids passing through the heat exchanger. The other fluid circulates about the tubes in the heat exchanger through openings provided in the end modules.

3,804,162

HEAT EXHANGER

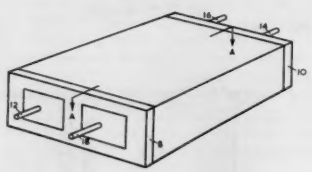
Simon Kugler, Barnet, and Stefano Bruzzi, London, both of England, assignors to The British Oxygen Company Limited, London, England

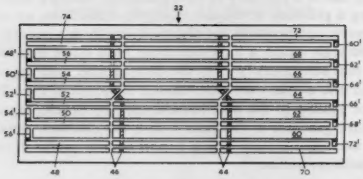
Filed Sept. 20, 1972, Ser. No. 290,639

Claims priority, application Great Britain, Sept. 21, 1971, 43946/71; Sept. 21, 1971, 43947/71

Int. Cl. F28d *9/00*

U.S. Cl. 165—164 **9 Claims**





A perforated plate heat exchanger comprising inlets and outlets for the gas streams to be heat exchanged and a plurality of heat conductive perforated plates arranged alternately with a plurality of heat insulative gaskets, whereby heat transfer takes place across the plates normally to the gas flow.

Each gasket has a configuration of walls that defines a number of passages for each gas stream, interconnection between different passages of the same gas stream being given by walls of a complementary configuration in at least two neighbouring gaskets.

3,804,163

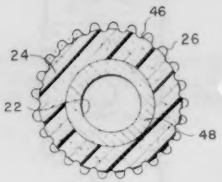
CATALYTIC WELLBORE HEATER

William S. Bradley, and William C. Hardy, both of Richardson, Tex., assignors to Sun Oil Company (Delaware), Dallas, Tex.

Continuation-in-part of Ser. No. 263,724, June 8, 1972, abandoned. This application Apr. 11, 1973, Ser. No. 350,283

Int. Cl. E21b *43/24*

U.S. Cl. 166—59 **19 Claims**



A catalytic wellbore heater, capable of being suspended from the lower end of well fire, utilizes a tubular member having a wall which is permeable to gas flow. A catalytic material may be coated directly on the tubular member or on a matrix material covering the tubular member.

3,804,164

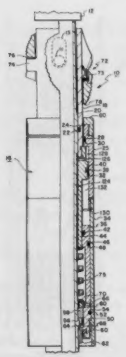
WELL PACKER APPARATUS HAVING IMPROVED HYDRAULICALLY-ACTUATED ANCHOR ASSEMBLY

Gary D. Ellis, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 9, 1973, Ser. No. 349,159

Int. Cl. E21b *23/04*

U.S. Cl. 166—120 **4 Claims**



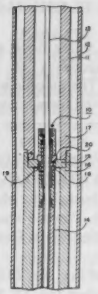
A first unitary slip located beneath the packing element is set from the surface by the operator by applying the weight of the tubing. Whenever the pressure beneath the packer exceeds the pressure above the packer which would normally cause the packer assembly to be moved upwardly within the casing, the excess pressure is used to drive a setting piston downwardly against a spring, the downward movement causing a setting sleeve to cause an upper unitary slip to rotate into contact with the casing and act as an anchor against upward movement of the tool. When it is desired to retrieve the overall assembly, pulling up on the tubing string causes the pressure to be equalized across the packer assembly and the tool can be removed from the borehole. The spring against which the setting piston works enables the apparatus to be run through fluid while moving through the borehole without a premature setting of the anchor assembly.

3,804,165

SUBSURFACE PUMP HOLDDOWN APPARATUS

Robert B. Meripol, Fayetteville, Ark., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 26, 1973, Ser. No. 344,665
Int. Cl. E21b *43/10*
U.S. Cl. 166—206 7 Claims



A lower mandrel threadedly connected to a subsurface pump barrel at its lower end is threadedly connected to an upper mandrel and through which a rod assembly adapted to reciprocate a pump piston through such barrel is adapted to be lowered from the earth's surface by the rod assembly to a restricted diameter tubing seal located within a tubing string in an earth borehole. A collected tubular member adapted to rotate about the lower mandrel is caused to deflect inwardly in passing through the tubing seal ring and further movement of the apparatus through the seal ring causes it to be locked in place within the tubing string. The single split collet entails a lower split shoulder which can deflect through the sealing ring with a second upper shoulder tapered to fit the taper on the top of the seal ring after passing through the ring, the lower shoulder of the collet being allowed to expand out to lock against the bottom of the sealing ring and hold the upper shoulder of the collet locked against the upper shoulder of the ring to thereby obtain a fluid seal between them.

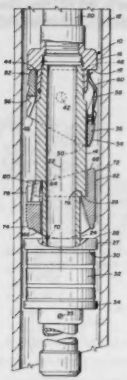
3,804,166

GRIPPING MEMBER FOR WELL TOOLS OR THE LIKE

Ernest Pillow Fisher, Jr., Carrollton, and David Lewis Abney, Jr., Stafford, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,022
Int. Cl. E21b *23/00*
U.S. Cl. 166—216 6 Claims

The improved gripping member disclosed herein includes a unitary body arranged to encircle a portion of the well tool and having upper and lower ends and a wall engaging portion located adjacent the upper and lower ends. The wall engaging portions are disposed on relatively opposite sides of the unitary body. The gripping member is arranged to move on the well tool from a retracted position wherein the wall engaging portions are out of engagement with the wall and a holding position wherein the wall engaging portions are in engagement with the wall. Means, for example a pair of bow springs are disposed on the unitary body on opposite sides thereof and at a generally normal position relative to the location of the wall engaging portions. The bow springs are arranged to extend into frictional engagement with the wall of the well bore to resist movement of the gripping member there-through so that other portions of the well tool can be moved relatively to the gripping member when desired.

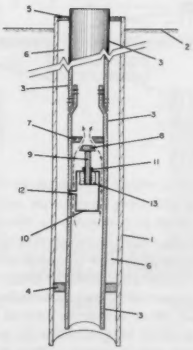


3,804,167

AUTOMATIC SHUT-IN OF DOWN HOLE WELL PRODUCTION

Samuel C. Swift, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed June 28, 1972, Ser. No. 266,882
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 R 8 Claims



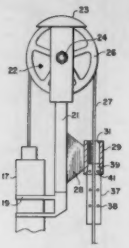
Accidental blow out of producing oil or gas wells is prevented by means of a storm choke which shuts off flow of the produced fluid automatically in response to an increasing of pressure within the casing of the well. Shut down of production through the tubing string thus occurs quickly and automatically if either the casing, tubing, or wellhead equipment fails above the choke or if the packer below the choke fails.

3,804,168

WIRE LINE CLAMP

Gailen D. Marshall, and Clarence H. Myska, both of Houston, Tex., assignors to Sperry-Sun Well Surveying Company, Sugar Land, Tex.

Filed June 8, 1972, Ser. No. 263,725
Int. Cl. E21b *47/022*
U.S. Cl. 166—250 9 Claims



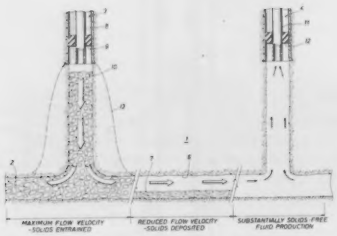
In a wire line cable system for use in drilling wells, a sheave is supported above a packoff on the upper end of drill pipe permit movement of wire line into the drill pipe. A socket is positioned below the sheave and has a bore for receiving the wire line. A clamp is secured to wire line below the socket and as the wire line moves into the packoff, the clamp engages the socket to prevent further movement of the wire line into the drill pipe.

3,804,169

SPREADING-FLUID RECOVERY OF SUBTERRANEAN OIL

Philip J. Closmann, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 7, 1973, Ser. No. 330,355
Int. Cl. E21b *43/24*, *43/28*
U.S. Cl. 166—267 5 Claims


MAXIMUM FLOW VELOCITY -SOLIDS ENTRAINED
REDUCED FLOW VELOCITY -SOLIDS DEPOSITED
SUBSTANTIALLY SOLIDS-FREE FLUID PRODUCTION

In a process for producing shale oil by circulating fluid through a cavity that contacts a subterranean oil shale, the cavity is extended laterally into both an injection well and a plurality of surrounding productions wells and the fluid is circulated at a rate causing the velocity within the cavity to decrease with radial distance away from the injection well to a velocity that is too low to transport relatively large particles of mineral solids.

3,804,170

METHOD OF USING OVERBASED SULFONATE WATER FLOOD ADDITIVE DERIVED FROM HEAVY COKER GAS OIL

Delmar D. Krehbiel, Lubbock, Tex.; M. Duane Gregory, Ponca City, Okla.; Charles R. Clark, Ponca City, Okla., and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 208,019, Nov. 24, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,463
Int. Cl. E21b *43/22*
U.S. Cl. 166—270 12 Claims

An improved anionic water flood additive and method of using same for the recovery of hydrocarbons from a petroliferous formation. The anionic water flood additive is an overbased sulfonate derived from heavy coker gas oil.

3,804,171

METHOD FOR RECOVERING HYDROCARBONS USING AN ANIONIC WATER FLOOD ADDITIVE

Delmar D. Krehbiel, Lubbock, Tex.; M. Duane Gregory, Ponca City; Charles R. Clark, Ponca City, and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 208,020, Nov. 24, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,464
Int. Cl. E21b *43/22*
U.S. Cl. 166—270 9 Claims

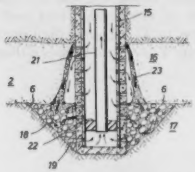
An improved anionic water flood additive and method of using same for the recovery of hydrocarbons from a petroliferous formation. The anionic water flood additive is an overbased sulfonate derived from pale oil extracts.

3,804,172

METHOD FOR THE RECOVERY OF OIL FROM OIL SHALE

Philip J. Closmann, and George O. Suman, Jr., both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 11, 1972, Ser. No. 296,729
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 5 Claims



Shale oil is recovered by forming a subterranean cavern that contacts an oil shale, packing the cavern with solid granules and removing organic and inorganic solids from the oil shale by circulating fluid from a surface location, into contact with the oil shale, through a mass of packed granules, and back to a surface location.

3,804,173

METHOD FOR REDUCING POLYMER ADSORPTION IN SECONDARY OIL RECOVERY OPERATIONS

Robert R. Jennings, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 159,054, July 1, 1971, abandoned. This application Mar. 9, 1972, Ser. No. 233,305
Int. Cl. E21b *43/16*
U.S. Cl. 166—275 10 Claims

In a secondary oil recovery operation where water soluble, high molecular weight polymers (i.e., $\geq 1.5 \times 10^6$) are used

to increase the viscosity of the oil displacing medium, adsorption of said polymers onto the reservoir's surface can be substantially decreased by the utilization of polymer conserving agents comprising low molecular weight (i.e., $\leq 5 \times 10^5$) polymers which contain one or more of the following monomers: acrylamide and N-substituted acrylamides; acrylic acid and ammonium, alkali or alkaline earth metal salts thereof; acrylonitrile; vinyl alcohol; vinyl ethers, esters and ketones; vinyl sulfonic acid salts; ethylenically unsaturated dibasic acid salts; styrene sulfonates; and the like.

3,804,174

WELL CEMENTING METHOD USING THIXOTROPIC

Jiten N. Chatterji, and Gabriel W. Ostroot, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed July 20, 1973, Ser. No. 381,301
Int. Cl. C04b *13/24*; **E21b** *33/14*
U.S. Cl. 166—293 **4 Claims**

A thixotropic cementing composition for use in oil and gas wells comprises a hydraulic cement slurry including as an additive a complex reaction product of a water soluble carboxyalkyl, hydroxyalkyl or mixed carboxyalkyl hydroxyalkyl ether of cellulose, and a polyvalent metal salt, for example a reaction product of hydroxyethylcellulose and zirconyl chloride.

ERRATUM

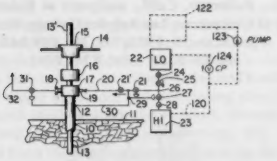
For Class 166—292 see:
Patent No. 3,804,058

3,804,175

SYSTEM OF FIREFIGHTING AND BLOW-OUT PROTECTION FOR A DRILLING OPERATION

Dolph S. Miller, 502 N. McKinney, Odessa, Tex.

Filed July 12, 1972, Ser. No. 270,956
Int. Cl. A62c *3/02*, *1/02*
U.S. Cl. 169—1 A **6 Claims**



A system of fire fighting and blow-out protection for a drilling operation comprising valves and flow conduits interconnecting a low pressure and a high pressure source of inert gas to the interior of a blow-out preventer assembly. A pneumatically actuated valve connected to the blow-out preventer outflow conduit is moved to the closed position upon a predetermined pressure being effected by the flow of inert gas therewithin.

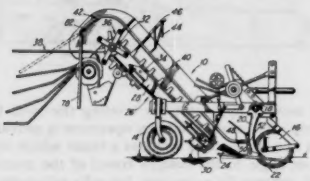
Gaseous hydrocarbons leaking from the blow-out preventer are rendered noncombustible by admixing an inert diluent therewith by moving a flow control valve to a first position. Should the situation deteriorate into a more dangerous condition, the valve can be further opened whereupon a high pressure source of inert gas is flow conducted into the blow-out preventer while at the same time the outflow valve from the blow-out preventer is moved to the closed position, thereby setting the rubber of the blow-out preventer assembly and increasing the effective hydrostatic head of the borehole, as well as lowering the inflammable limits of the escaping gaseous hydrocarbons.

3,804,176

ADJUSTABLE STAFF FOR PEANUT SHAKER-INVERTER MACHINE

Larry Douglas Harrell, and Jesse Daniels, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.

Filed Feb. 26, 1973, Ser. No. 335,472
Int. Cl. A01d *29/00*
U.S. Cl. 171—101 **6 Claims**



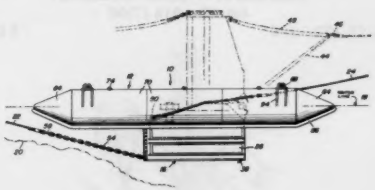
The staff used with a peanut shaker-inverter to crowd the peanut plants and tip them on their sides as they are conveyed upwardly on the shaker-conveyor portion of the machine is provided with an extendible forward tip which lies substantially horizontal. The free end of this tip is pivotally attached at different elevated positions at the rear side of the plow standard. A suspended bar dangles from the trailing end of the staff to aid in assuring that the peanut plants fall in upended positions onto the ground surface.

3,804,177

FLOATING DRAG SCOOP

Walter D. Renfroe, Geneva, N.Y., assignor to Terra Marine Scoop Company, Inc., Geneva, N.Y.

Filed July 26, 1972, Ser. No. 275,264
Int. Cl. F02f *5/28*
U.S. Cl. 172—26.5 **14 Claims**

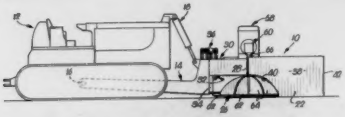


A floating drag scoop supported between two flotation type pontoons in which the scoop is of generally rectangular configuration provided with an open area in the front and bottom and a screened top so that the scoop may collect material from a body of water. The scoop or basket is supported from the pontoons by pivot means to enable the scoop or basket to be elevated to a vertical position with the scoop or basket also being oriented at a desired elevation in the body of water to permit the gathering or collecting of floating or suspended vegetation, debris, or similar material, and also the collecting of material from the bottom of a body of water, such as lakes, rivers, ponds, lagoons, and the like. The floating drag scoop is traversed forwards and backwards in relation to the body of water by the use of a truck mounted double drum winch and cables or other flexible members attached to the front and to the rear of the scoop and to the truck mounted winch with the cable being entrained over a sheave or snatch block connected to a deadman on the shore opposite to the truck.

3,804,178
DIRT MOVING APPARATUS

Bernard B. West, P.O. Box 247, Mound City, Kans.

Filed Oct. 10, 1972, Ser. No. 296,124
Int. Cl. A01b 49/02; E02f 3/76
U.S. Cl. 172—67 6 Claims

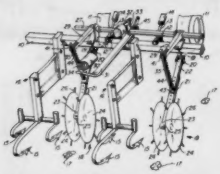


A dirt moving apparatus for leveling the spoil banks left after a strip pit or surface mining operation is provided for attachment to a tractor and includes a blade which engages the earth at an angle to the path of travel of the tractor and an elongated, rearwardly extending, laterally adjustable landside for controlling the side draft of the blade. An elongated, vertical roller is disposed adjacent the trailing end of the landside and extends beyond the planar outer surface of the same for engagement with the earth thereby reducing the friction that would otherwise be encountered as a result of the landside bearing against the face of the cut made by the blade. Positioned adjacent the rearmost end of the blade is a horizontally disposed rotatable disc having a plurality of upright vanes for scattering and redistributing the dirt as it is being displaced by the blade, thereby effecting a leveling of the spoil banks. Thevanes may be provided with freely swingable outer sections or the like are encountered, thus avoiding damage to the disc and vane assembly. The apparatus is tiltable about an axis parallel to the path of travel of the tractor for insuring that proper engagement with a bank is maintained as the tractor moves longitudinally along the sideslope thereof.

3,804,179
CULTIVATOR SHIELD CONTROL MECHANISM

Gordon M. L. Johnson, Rural Rt. No. 1, Franklin, Minn.

Filed May 5, 1972, Ser. No. 250,627
Int. Cl. A01b 17/00
U.S. Cl. 172—510 5 Claims

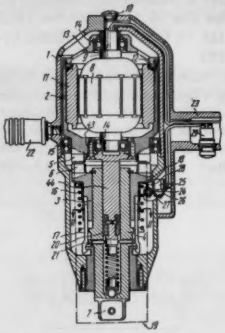


Shield assemblies for row crop cultivators include a draw bar pivotally hinged at its forward end to a main mounting bar of the cultivator. A pair of cultivator shields are attached to the trailing end of said draw bar. The power-operated shield control mechanism includes a transverse control bar, powered means to effect rotary shifting of it, and a shield control linkage. The shield control linkage includes a radially-outward arm fixed to the control bar, plus a connecting rod extending between that arm and the draw bar of said shield assembly. The connecting rod is floatingly mounted to the radially-outward arm and flexibly hinged to the draw bar. Yieldable means permit the shields to be forcibly pressed into the soil. The power-operated control mechanism is effective both to forcibly press the shields into the soil and to elevate the shields plus the draw bar thereof to an out-of-the-way position.

3,804,180
IMPACT WRENCH

Mikhail Lvovich Gelfand, Yaroslavskoe shosse, 129, kv. 44, Moscow; Yakov Isaakovich Tsipenjuk, Moskovskaya oblast, ul. Kirova, 6, kv. 30, Solntsevo; Petr Ivanovich Podlesnykh, ul. Raschupkina, 12, korpus 1, kv. 29, Moscow; Vladimir Adamovich Sergeichik, Vyborg, ul. Kuibysheva, 4, kv. 24; Mikhail Isaakovich Rutgaizer, ul. Kuibysheva, 4, kv. 5, both of Vyborg, and Georgy Afanasievich Antipov, ul. Krasny Mayak, 3, kv. 146, Moscow, all of U.S.S.R.

Filed July 7, 1972, Ser. No. 269,587
Int. Cl. B25b 21/02
U.S. Cl. 173—15 10 Claims



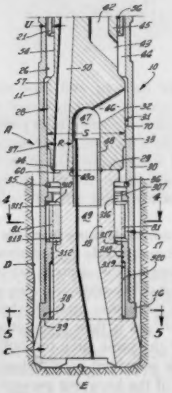
An electrically driven impact wrench is adapted to be used both for assemblying end disassemblying threaded fasteners.

The hammer of this wrench is rigidly connected to a rotor of the electric motor enclosing a stator; an anvil is constantly springly urged towards the hammer, while a space between the impact jaws of the anvil and hammer is defined by locking means operatively connected to a spindle.

3,804,181
BORE HOLE FOR HAMMER DRIVE MECHANISM

Alfred R. Curington, Houston, Tex., and Archer W. Kammerer, Jr., Fullerton, Calif., assignors to Baker Oil Tools, Inc., City of Commerce, Los Angeles County, Calif.

Filed Mar. 29, 1972, Ser. No. 239,047
Int. Cl. B25d 9/04; E21c 1/02
U.S. Cl. 173—17 14 Claims



A hammer piston reciprocates in a housing and impacts against an anvil in the housing which is integral with a drill bit,

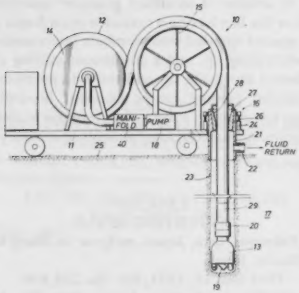
a drilling string rotating the housing during the repeated impacting of the piston against the anvil. Torque is transmitted from the housing through a plurality of segments to the anvil during the impacting action, transmission of the torque occurring from the segments through generally chordal surfaces formed on the anvil. Such generally chordal surfaces are preferably concave, but can be straight or planar. Alternatively, the torque can be transmitted directly from a housing member to the anvil through coengaging planar chordal surfaces on the housing member and anvil.

3,804,182

METHOD OF PLACING EXPLOSIVE CHARGES

James C. Adair, Bellaire, and Robert R. Luke, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed July 27, 1972, Ser. No. 275,857
Int. Cl. E21b *7/18*
U.S. Cl. 175—1 **5 Claims**



Seismic energy for geophysical prospecting is provided by drilling a shot-hole to a selected depth using a cutting tool such as a hydraulic jet nozzle or a downhole drill motor attached to a non-rotating, continuous flexible spooled conduit; pumping a liquid explosive and detonating means actuatable from the earth surface down the conduit, through the cutting tool and into the shot-hole; withdrawing the conduit and cutting tool from the shot-hole; and detonating the explosive.

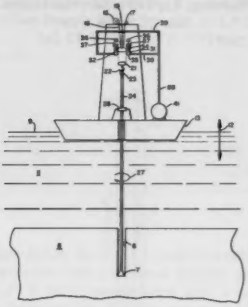
3,804,183

DRILL STRING COMPENSATOR

Anthony Bruce Duncan, Piedmont, Calif.; Richard Galen Sprague, Houston, Tex., and Arthur Hor Ting Chin, Piedmont, Calif., assignors to The Rucker Company, Oakland, Calif.

Filed May 1, 1972, Ser. No. 249,395
Int. Cl. E21b *19/08*
U.S. Cl. 175—5 **8 Claims**

For use with a standard drilling rig on a floating barge, there is interposed between the travelling block frame and the drill string support a drill string compensator having a cylinder and piston expansible chamber (with or without a motion multiplier) furnished with air under pressure within a normally closed volume. The air chamber acts as a cushion and is arranged so that the variation in chamber volume produces only a small change in the air pressure, which can be set at any desired



average value. Motion of the pneumatic, expansible chamber is controlled by a hydraulic expansible chamber. Various emergency and manual controls are provided.

3,804,184

CORE DRILLING APPARATUS

Moisei Timofeevich Gusman, Vorobievskoe shosse, 11, kv. 69; Leonid Pavlovich Konstantinov, Lomonosovsky prospekt, 23, kv. 495; Boris Davidovich Malkin, ulitsa Vavilova, 54, korpus 1, kv. 38, all of Moscow; Adolf Nikolaevich Martyshin, ulitsa Mira 8, kv. 33, Ljubertsy Moskovskoi oblasti; Gely Meierovich Nikitin, Kerchenskaya ulitsa, 2/35, kv. 147, and Yakov Alexandrovich Edelman, Leningradskoe shosse, 98, kv. 87, both of Moscow, all of U.S.S.R.

Filed Mar. 8, 1973, Ser. No. 339,052
Int. Cl. E21b *49/02*
U.S. Cl. 175—226 **3 Claims**

Mounted on the exterior of a non-rotatable core barrel is an end of a resilient tape the other end of which extends inwardly into the barrel and is connected to a device for pulling the tape inwardly into the barrel. The apparatus is also provided with an arrangement which forms a sleeve from the tape as this is being pulled into the core barrel. During the coring operation, the tape is being pulled inwardly into the barrel and a sleeve is formed from the tape with the aid of said arrangement to encase and protect the core from disturbance.

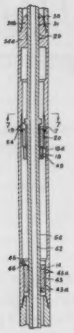
The coring apparatus is intended for core drilling in soft, unconsolidated and fractured formations.

3,804,185

JARRING AND BUMPING TOOL FOR USE IN OILFIELD DRILLING STRINGS

Leonard Mason, Edmonton, Alberta, Canada, assignor to Lee-Mason Tools Ltd., Edmonton, Alberta, Canada

Filed Aug. 12, 1971, Ser. No. 171,063
Int. Cl. E21b *1/10*
U.S. Cl. 175—297 **15 Claims**



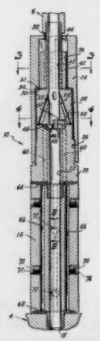
A single tool, having a bumper free-stroke chamber and jar free-stroke chamber spaced apart by the usual reduced - diameter barrel section, is provided. The tool carries impact faces and is adapted to selectively jar upwardly or bump downwardly.

3,804,186

VALVED JET DEVICE FOR WELL DRILLS

William N. Schoeffler, Rt. 1, Box 389, Carencro, La.

Filed Apr. 20, 1973, Ser. No. 353,095
Int. Cl. E21b *41/00*
U.S. Cl. 175—317 **8 Claims**



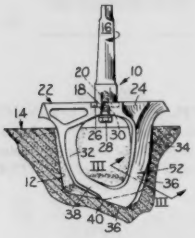
Valve members that are relatively rotatable through only a limited amount constitute a lost motion rotary drive connection between a drill string and a drill head. When the drill string is driving the drill head in one direction the valve members are open to provide free flow of drilling mud to the drill head but when the drill string is rotated in the other direction a small amount relative to the drill head, the valve members assume a closed position to substantially prevent flow of mud to the drill head, the mud being directed to jets in a drill collar and/or stabilizing collar to loosen sand or other material in the well that may have caused the drill to become stuck.

3,804,187

BORING TOOL

Carl E. Fischer; Albino F. Delmastro; Thomas S. Burdge; Harrel B. Brewington, all of Perkin; John B. Harris, East Peoria, and Joseph Zaremba, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 15, 1972, Ser. No. 306,708
Int. Cl. E21c *13/00*
U.S. Cl. 175—409 **9 Claims**



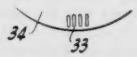
A boring tool for drilling relatively large diameter blind bottom holes in articles of solidified granular material such as sand molds or the like having a rotatable open frame including oppositely spaced spiraled side members interconnected by a material penetrating tip, and a continuous cutting edge marginally disposed along the tip and the side members and including material guiding ramps disposed inwardly of the cutting edge for assuring substantially complete discharge of separated granular material longitudinally outwardly from the tool.

3,804,188

WEIGHTING SCALE

Yoshitaka Fukuma, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1971, Ser. No. 208,596
Claims priority, application Japan, Dec. 26, 1970, 45-127730; Aug. 4, 1971, 46-59127
Int. Cl. G01g *23/22, 23/42*
U.S. Cl. 177—25 **10 Claims**



The present disclosure is directed to a weighing scale which generally comprises a spring mechanism, an A-D converter and an electronic calculating unit. Under conditions of load an indicating pointer makes a circular movement, its angular displacement corresponding to the weight of the load. The angular displacement of the pointer is photoelectrically sensed by motor-driven scanning means mechanically isolated from the weighing scale mechanism which generates a train of pulses the number of which is proportional to the weight.

3,804,189

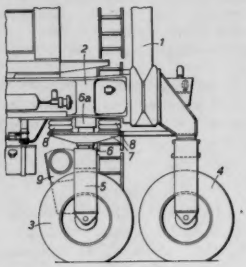
LOAD CARRYING VEHICLES

Richard Terence Smith, Wolverhampton, England, assignor to Rubery, Owen & Co. Limited, Darlaston, Wednesbury, Staffordshire, England

Filed July 26, 1972, Ser. No. 275,349
Int. Cl. B62d *61/10*
U.S. Cl. 180—24.02 **10 Claims**

A straddle carrier for freight containers has three or four wheels on each side, the outer wheels being unsprung and the

inner wheel or wheels being the driving wheels and being suspended from the chassis by pneumatic units. The volume of



these units is small compared to the volume of the air supply vessel so that the volume/pressure change is small when the carrier is loaded or unloaded.

3,804,190

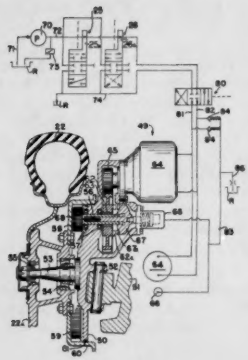
AUXILIARY-POWERED WHEEL UNIT FOR DIRIGIBLE WHEEL APPLICATIONS

Walter M. Shaffer, Peoria, Ill., assignor to Towmotor Corporation, Mentor, Ohio

Filed Oct. 10, 1972, Ser. No. 296,221

Int. Cl. B60K *7/00*

U.S. Cl. 180—44 F **4 Claims**



By employing a housing having fittings adapted to be pivotally connected to an axle with a king pin and a spindle on the opposite side, a wheel having a drum with an internal ring gear can be journalled on the spindle and the wheel on the rotor can be driven by a pinion gear keyed to a stub shaft extending through the housing above the spindle so the pinion meshes with the ring gear, reduction gearing clutched to the stub shaft and driven by a motor mounted in the housing above the reduction gearing provides a drive which forms a narrow compact wheel drive unit that can be manufactured at an economical cost.

3,804,191

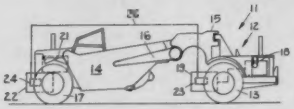
TRANSMISSION COORDINATING SYSTEM WITH ANTI-STALL MEANS FOR VEHICLES HAVING A PLURALITY OF ENGINES

Kenneth F. Golan, Pekin, and Charles E. Holzinger, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 4, 1972, Ser. No. 311,925

Int. Cl. B60k *17/34, 19/16*

U.S. Cl. 180—49 **10 Claims**



A first engine drives the front wheels of a vehicle through a master transmission and a second engine drives the rear wheels through a slave transmission and a remote control system normally maintains the slave transmission in the same drive ratio as the master transmission. Anti-stall means assumes control of the remote control system to downshift the slave transmission, preferably to a torque converter range, if vehicle speed drops below a predetermined value while the master transmission remains at an inappropriately high drive ratio as this condition is indicative of a loss of traction at the front wheels. Means are provided for holding the slave transmission in the down-shifted condition if vehicle speed fluctuates slightly about the value which activates the anti-stall means.

3,804,192

SEAT BELT RESPONSIVE ENGINE ENABLING DEVICE

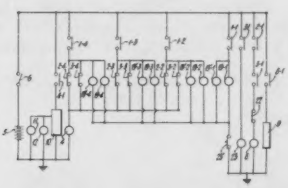
Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,562

Claims priority, application Japan, Oct. 14, 1970, 45-090684; Oct. 6, 1970, 45-087139; July 14, 1970, 45-069730; Aug. 27, 1970, 45-084724

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 C **12 Claims**



A motor vehicle safety belt system includes a switch actuated by the engagement of the driver's safety belt and a network for starting the vehicle engine upon the acutation of the switch. The passenger seats are provided with switches actuated by the occupation of the respective seats and switches actuated by the engagement of the respective safety belts, a signal being given if any seat is occupied and the respective seat belt disengaged. Each of the belts is provided with a spring wound take up reel which is pawl and sprocket braked against belt withdrawal, the brake being released upon occupation of a corresponding seat and engaged upon the actuation of a vehicle mounted inertia switch. The belts are of the waist and shoulder types, the shoulder belt having overlapping sections which are joined along longitudinally spaced transverse lines of stitching which are rupturable under progressively larger loads to extend the shoulder belts by successive increments under such loads.

3,804,193

AUTOMATIC CONSTANT SPEED CONTROL SYSTEM FOR VEHICLES

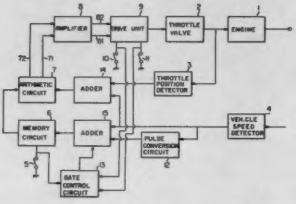
Hiroshi Ikuta, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 26, 1972, Ser. No. 292,462

Claims priority, application Japan, Sept. 30, 1971, 46-76897

Int. Cl. B60k 27/00

U.S. Cl. 180—105 E 1 Claim



An automatic constant speed control system for vehicles, in which when either a setting switch or a vehicle speed change switch is operated to set the desired speed, pulse signals corresponding in number to the throttle position derived from said desired vehicle speed are generated and the sum of said pulse signals and those pulse signals which are proportional in number to the vehicle speed are stored in a memory, whereby when the desired speed is reached, the vehicle can accurately come to a constant speed driving condition at the vehicle speed existing at that moment without a deviation of several Km/h as was the case with conventional systems.

ERRATUM

For Class 180—116 see:
Patent No. 3,804,197

3,804,194

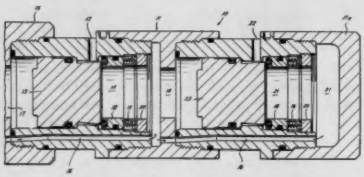
METHOD AND SEISMIC PNEUMATIC ENERGY PULSE GENERATORS FOR INCREASING ENERGY OUTPUT

Charles F. Umphenour; Reynaldo Calderon, both of Houston, and John R. Rogers, Stafford, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 29, 1972, Ser. No. 267,318

Int. Cl. G01v

U.S. Cl. 181—.5 H 18 Claims



At least one method for increasing the energy output of a seismic pneumatic energy generator for generating a seismic primary pulse with attenuated secondary pulses and three articles for practicing or carrying out the method are disclosed. One seismic pneumatic energy generator for practicing the method comprises two similar, tandem, compressed air chambers having radial exhaust ports and two piston valves, one valve forming the front end of the first chamber and the other valve forming both the rear end of the first chamber and the front end of the second chamber so that the second valve is responsive to the depressurizing of the first chamber for opening the second exhaust port for releasing the energy from the second chamber for forming a seismic pneumatic energy generator of increased energy output, increased total volume of the compressed air chambers, and increased total exhaust port area without requiring change in the shape of the exhaust ports, without changing the pulse signature, nor the bubble ratio.

Modifications for practicing the method include seismic pneumatic energy generators having three or more similar, tandem, compressed air chambers with ports and valves for each.

3,804,195

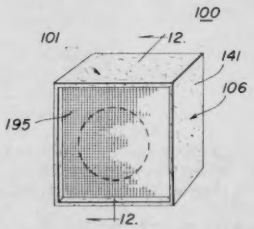
LOUDSPEAKER ENCLOSURE

Scott F. Everitt; Robert E. Croup, and Alvin A. Strawn, all of Indianapolis, Ind., assignors to Acoustic Fiber Sound System, Inc., Indianapolis, Ind.

Filed May 25, 1972, Ser. No. 256,926

Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B 13 Claims



A loudspeaker enclosure comprises four discrete side wall units and an end wall unit each including a plurality of rectangular sheets of corrugated material arranged in a laminated stack with the corrugations of each sheet extending perpendicular to the corrugations of adjacent sheets, opposite ends of each side wall unit being constructed complementary to each other and the side wall units being assembled end-to-end with complementary ends glued and taped together to form a tubular wall structure rectangular in transverse cross-section defining an opening at one end thereof and being closed at the other end thereof by the end wall unit. The outer sheet of each side wall unit extends laterally beyond the other sheets thereof and is partially severed to form a flap which is folded back toward the other sheets and spaced therefrom to define a channel adjacent to the one end of the tubular wall structure for receiving a mounting frame therein. A loudspeaker mounting board with a loudspeaker mounted thereon is secured to the mounting frame and a grille cloth frame covered by a grille cloth is secured to the loudspeaker mounting board. Suitable strips of sealing and cushioning material are provided between the mounting frame and the mounting board.

3,804,196

NOISE ABSORBING ELEMENT IN BLOCK FORM

Jurgen Horn, Holderlinweg; Hans-wilhelm Hollstein, Gottingen-Grone, and Alexander Betker, Gottingen, all of Germany, assignors to Schoeller & Co. KG, Gottingen, Germany

Filed Jan. 28, 1972, Ser. No. 221,620

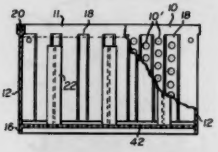
Claims priority, application Germany, Feb. 1, 1971, 2104548

Int. Cl. E04b 1/82

U.S. Cl. 181—33 G 10 Claims

A noise absorbing element capable of being vertically stacked and/or attached to vertical members includes a tube which is rectangular in cross-section which forms the front,

back and side walls of the element. One or more partitions and/or spacing elements are located inside the tube and divide the interior thereof into at least a front cell and a rear cell. The front cell is closed at the bottom and is filled with a sound absorbing material such as glass or rock wool. For vertically stacking, the upper or lower end of the tube terminates in an annular channel which is adapted to receive the corresponding upper or lower end of the next adjacent barrier element.



3,804,197

FLUID-CUSHION-CONTAINING FACILITY FOR GROUND EFFECT MACHINE

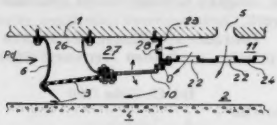
Robert Georges Grignon, Verrier Le Buisson, and Paul Francois Guienne, Paris, both of France, assignors to Bertin & Cie, Plaisir, France

Filed Jan. 25, 1971, Ser. No. 109,361

Claims priority, application France, Jan. 26, 1970, 70.02651

Int. Cl. B60v *1/16*

U.S. Cl. 180—116 **6 Claims**



The invention comprehends a ground effect machine having a moving frame near and opposite to a bearing surface with the interposition of a pressure fluid cushion which is contained at the front, as considered in the direction of movement of said machine, by a front wall adapted to move away from or towards said frame and co-operating with the bearing surface to bound a working cushion fluid leakage gap, said machine comprising means which are sensitive to the dynamic pressure produced by the speed of travel of said machine and which are so coupled with said front wall that any increase in dynamic pressure produces a relative movement of said front wall and said frame towards one another and vice versa.

ERRATUM

For Class 181—.5 NP see:
Patent No. 3,804,205

3,804,198

COMBINATION LADDER AND MUDBOARD

Julius T. Palumbo, Highway 90 West, Sulphur, La.

Filed Sept. 7, 1972, Ser. No. 287,154

Int. Cl. E04g *5/08*; **E06c** *1/39*

U.S. Cl. 182—21 **4 Claims**

A combination ladder and mudboard structure comprising a pair of spaced, parallel, elongated rung-equipped frame members defining ladder legs with a pair of telescopic extensions mounted thereto, a generally flat panel mounted atop the frame members for supporting a welder in a reclined working position, and a pair of legs pivotally connected to frame members at one end thereof and movable between a first position disposed between the frame members and a second position generally perpendicular to the frame members for supporting the overall structure with the panel inclined relative to the ground for supporting the welder on his back.

3,804,199

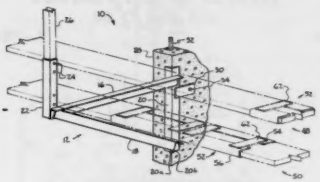
APPARATUS FOR CONSTRUCTING SCAFFOLDS

Herman H. Bondi, 1224 S. E. Henry, Portland, Oreg.

Filed June 29, 1972, Ser. No. 267,680

Int. Cl. E04g *3/08*, *7/20*

U.S. Cl. 182—82 **3 Claims**



A method and apparatus for erecting a scaffold, wherein prefabricated brackets are utilized for supporting a scaffold walkway composed of a number of joined planks. Each bracket comprises a triangularly shaped angle-iron weldment having fastening means by which the bracket may be attached to the edge of a wall, or to the face of a wall if desired, by a single bolt inserted through the wall material. Structural sleeves are provided for evenly joining the walkway planks together, either in straight end-to-end relation or, alternatively, at right angles to one another to permit the scaffold walkway to extend around a corner. The sleeves are designed to make each joint extremely resistant to bending, thereby permitting the various joints to be located at arbitrary locations determined solely by the non-uniform lengths of the various planks utilized rather than by the placement of the scaffold support brackets.

3,804,200

BOTTOM STEP UNIT FOR BOAT LADDERS

Robert G. Sandberg, 3933 Oak Dr., Bountiful, Utah

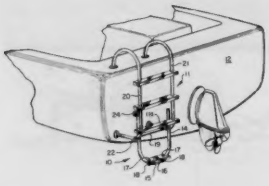
Filed Feb. 5, 1973, Ser. No. 329,706

Int. Cl. E06c *5/24*, *1/38*

U.S. Cl. 182—91 **4 Claims**

A step unit adapted to be pivotally mounted at the lower end of a boat ladder, such that the step will automatically

swing to a position out of the water during normal boat travel, and can be readily lowered to a position beneath the water level as an aid to boarding of the boat. The step unit comprises



a frame having a step on one end thereof, and projecting arms, at least one of which cams a counterweight on the opposite end. Means are provided for pivotally connecting the arms to side rails of the ladder.

3,804,201

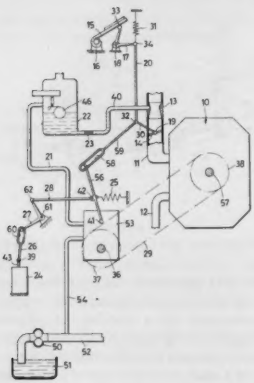
OIL RATE REGULATOR FOR INTERNAL COMBUSTION ENGINE TIGHTNESS MEMBER

Pietro Rombi, Lainate, and Nunzio D'Alfonso, Milan, both of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Feb. 18, 1972, Ser. No. 227,404

Int. Cl. F01m *1/18*

U.S. Cl. 184—6.1 **5 Claims**



The tightness problem in internal combustion engines is usually solved by film between the apical portion of the segments and the chamber walls. The device disclosed herein is controlled by temperature sensitive means, so as to increase the rate of flow of the oil pump when the engine is cold, a condition which is particularly susceptible of causing damages due to cold wear.

3,804,202

COMPRESSOR LUBRICATION SYSTEM

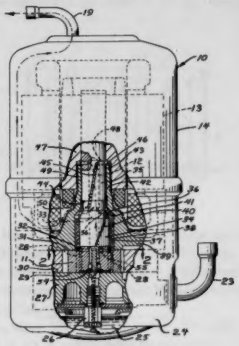
Ludwig F. Funke, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 2, 1972, Ser. No. 277,323

Int. Cl. F04b *17/00, 39/02;* **F01m** *1/00*

U.S. Cl. 184—6.16 **10 Claims**

A rotary compressor having improved means for removing gasses from the lubricating oil to prevent scoring and galling of the rotor bearings. The gas-removing means separates the bulk of any gas carried in the lubricating oil prior to the delivery thereof to the bearings. A supplemental gas-removing means is provided for removing further gas developed in the



oil by vaporization of the gas-forming liquid in the oil as an incident of heating thereof by the relatively high temperature bearings.

3,804,203

NOVEL LUBRICATING MEANS

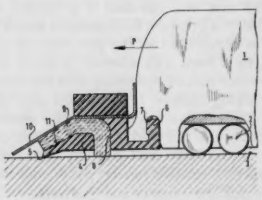
Hartmut Koschmieder, Erlangen; Armin Olschewski, Schweinfurt; Hans-Dieter Paschke, Erlangen-Bruck; Wolfgang Pflugner, and Jurgen Rabe, both of Herzogenaurach, all of Germany, assignors to Industriewerk Schaeffler, OHG, Herzogenaurach, Germany

Filed June 2, 1972, Ser. No. 258,970

Claims priority, application Germany, June 18, 1971, 2130420

Int. Cl. F16n *1/00*

U.S. Cl. 184—64 **5 Claims**



A novel lubrication means for bearing elements, preferably roller bearings longitudinally moveably mounted on a bearing surface or on a structural member which is longitudinally moveably mounted, the said bearing element being provided with on at least one face a stripper means resting on the race on the surface of the structural member to keep dirt and other foreign matter from the rollers. One type of roller bearing may be a roller circulating housing or a cylindrical casing.

3,804,204

SELF-TIMER

Tetsuji Shono, Ranzan-machi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 25, 1973, Ser. No. 363,820

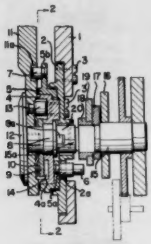
Claims priority, application Japan, June 28, 1973, 48-63983

Int. Cl. G03b *9/64*

U.S. Cl. 185—39 **17 Claims**

A self-timer is driven by a spring motor through a drive shaft that is arrestable by an anchor. The motor is wound by a

charging lever which is independently rotatable about the shaft. A starting member is also rotatable about the shaft to release the anchor. If it is desired to interrupt the timing operation, the starter is returned to its original position to



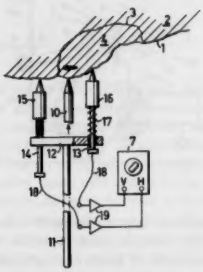
cause the anchor to terminate rotation of the shaft. The starting member can also be returned to its original position by manually rotating the charging lever back to its restored position.

3,804,205

DEVICE FOR INVESTIGATING PROPERTIES OF ROCK TO ESTABLISH THE PRESENCE OF LOOSE BLOCKS ADJACENT TO THE SURFACE THEREOF

Ruben Valdemar Tegholm, Johanneshov, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 1, 1971, Ser. No. 111,599
Claims priority, application Sweden, Feb. 5, 1970, 1489/70
Int. Cl. G01n *19/08, 29/04*
U.S. Cl. 181—.5 NP **12 Claims**



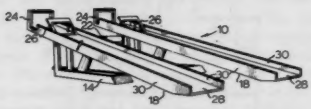
When scaling rock, in particular in connection with blasting rock chambers and rock tunnels, the presence of loose blocks adjacent the surface of the rock is detected by bringing at least two electro-accoustic transducers into contact of the wall of the rock under examination at a distance from each other and comparing phase or amplitude or, as the case may be, both these properties of voltages generated by the electro-accoustic transducers in dependence of mechanical oscillations present in the rock. The presence of a block which is separated from the adjacent mass of rock is detected by evaluating amplitude or phase, or both, of signals generated by the or to each two, respectively, transducers when brought into contact with the rock surface under investigation. When the transducers are in contact with a loose block, the ratio of or difference between signals generated by the two transducers differ from those obtained when the same transducers are brought into contact with the surface of solid rock, thus making observation or indication of the presence of a loose block possible.

3,804,206

RAMP HOIST

Leslie Bubik, Toronto, Ontario, Canada, assignor to Vulcan Equipment Company, Ltd., Toronto, Ontario, Canada

Filed July 28, 1972, Ser. No. 276,226
Int. Cl. B60s *13/00*
U.S. Cl. 187—8.52 **8 Claims**



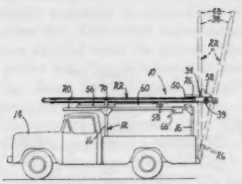
A ramp type vehicle hoist having a pair of ramps pivotal upwardly from a ground engaging position, with rams interconnecting a ground frame portion with the ramps, to permit raising of a vehicle upwardly into level or a forwardly tilting position, and a pair of chocks with a manual control lever to set the chocks in a partially retracted position, for passage of a pair of vehicle wheels thereover, the passage of the wheels serving to release the chocks upwardly into a wheel engaging position.

3,804,207

LIFTING ATTACHMENT FOR LIGHTWEIGHT VEHICLES

William J. Stonebraker, 400 Belmont Ave., and Leroy C. Brashers, Jr., 100 Robert Ln., both of Bakersfield, Calif.

Filed Dec. 9, 1970, Ser. No. 96,542
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **8 Claims**



This lifting attachment is adapted for mounting on a pickup truck. When stowed it is carried on a ladder rack on the vehicle, and when in use it is mounted on the vehicle trailer hitch. The attachment is designed for lifting weights up to 500 pounds to the height of a two story roof. The attachment consists of a boom mounted on the ladder rack by a boom carriage which is movable horizontally to carry the boom from its stowed position horizontally at rest on the ladder rack, to its use position where it can be tipped vertically and attached at its lower end to the trailer hitch of the vehicle. A lift carriage is mounted on the boom and driven up and down by means of a cable and winch, to accomplish the lifting.

3,804,208

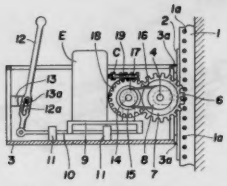
CAGE APPARATUS RISING AND FALLING ON A WALL SURFACE

Mizuho Iida, Yokohama, Japan, assignor to Sanwa Tetsuki Kougiyou Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1971, Ser. No. 186,718
Claims priority, application Japan, Feb. 10, 1971, 46-5297
Int. Cl. B66b *11/04*
U.S. Cl. 187—19 **2 Claims**

A cage or car for ascending and descending movements on a vertical wall surface of a structure in which a pin rack and a guide rail on each side of the rack are fixed on the wall sur-

face. The cage is defined by a frame having a bottom plate and arms projecting from the frame are operably engaged with the guide rails. A rotatable driven shaft is supported in the cage in parallelism to the pins of the rack and a sprocket on the driven



shaft engages the pins. An internal combustion engine on the bottom surface of the cage and a power transmitting means is provided for driving the driven shaft normally and reversely via a worm-type reduction gear from the engine.

3,804,209

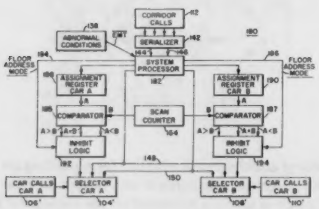
ELEVATOR SYSTEM

David M. Edison, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1973, Ser. No. 340,618

Int. Cl. B66b *1/20*

U.S. Cl. 187—29 R **9 Claims**



An elevator system including a plurality of elevator cars, and a system processor for dispatching the elevator cars. The system processor provides floor address and address interpretation signals for the cars, which signals select whether or not a car is able to answer a corridor call, and when it is, the signals determine whether the car will consider only a corridor call from the addressed floor, or a predetermined family of calls using the addressed floor as a reference.

3,804,210

CANCELLATING DEVICE FOR SUPPRESSING OSCILLATIONS OF STRUCTURES IN FLUID FLOW

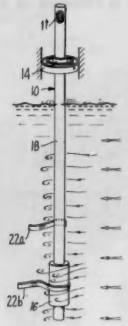
Albert L. Erickson, 231 Vine St., Menlo Park, Calif.

Filed June 29, 1972, Ser. No. 267,392

Int. Cl. F16f *7/00*

U.S. Cl. 188—1 B **16 Claims**

Method and apparatus for suppressing fluid flow induced oscillations in structures such as smokestacks, suspended cables and periscopes, by altering the outer surface configuration of the structure to provide a portion thereof which is subject to flow induced forces out of phase with the flow induced



forces on the remaining structure wherein there is an overall cancellation of forces and the structure is nearly stationary.

3,804,211

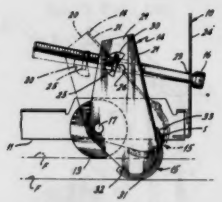
COMBINATION BRAKE AND ROLLER FOR CABINET STRUCTURE

Earl S. Scherzinger, Connersville, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Dec. 7, 1972, Ser. No. 311,723

Int. Cl. B60t *1/14*

U.S. Cl. 188—5 **5 Claims**



A refrigerator cabinet is provided with rollers at each of its lower front and rear corners, each rotatable on shafts fixedly mounted on the cabinet. A bracket is pivotal on each of the front roller shafts, which bracket includes a friction pad. Pivotation of the brackets is such that in one position thereof the front rollers are caused to engage the floor and, along with the rear rollers, support the cabinet. In another position of the brackets, their friction pads are caused to engage the floor and, along with the rear rollers, support the cabinet, with the front wheels held in slightly elevated position to brake the cabinet against rolling. Pivotation of each bracket is effected by a manually rotatable screw accessible at a corresponding front corner of the cabinet.

3,804,212

VEHICLE WHEEL BRAKE UNIT

Tetsuo Haraikawa, Kawasaki, Japan, assignor to Tokico Limited, Kawasaki-shi Kanagawa-ken, Japan

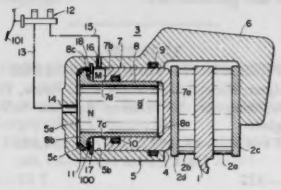
Filed July 31, 1972, Ser. No. 276,441

Int. Cl. F16d *55/18, 55/224*

U.S. Cl. 188—72.4 **3 Claims**

A hydraulic wheel brake unit for receiving, in a dual fashion, pressure liquid from a hydraulic pressure-generating

and supply source of a power driven wheeled vehicle such as an automobile for pressurizing friction means against a brake



disc rotatable in unison with a wheel of the vehicle for effecting a vehicle braking operation.

3,804,213

DISC-BRAKE WITH HEAT-SINK USING GRAPHITE

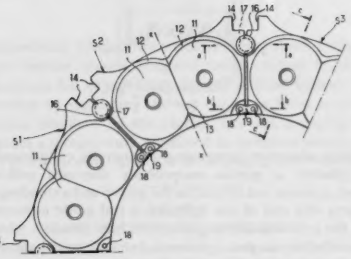
Rene Lucien, Neuilly-sur-Seine, and Jean Masclet, Paris, both of France, assignors to Messier-Hispano, Paris, France

Filed July 3, 1972, Ser. No. 268,755

Claims priority, application France, July 2, 1971, 71.24346; Mar. 1, 1972, 72.07087

Int. Cl. F16d *65/12*

U.S. Cl. 188—73.2 **9 Claims**



A disc-brake comprising rotors and stators fitted adjacent one another in alternating arrangement. Each of the intermediate rotors and stators is composed of a structure which includes a rim constituted of arcuate sectors placed next to each other and interconnected by connection means. The sectors have opposite faces and are provided on each of these faces with a cavity defined by two cylindrical recesses, the walls of which intercept along an axis of symmetry of the associated sector. Two graphite friction shoes are fitted into each recess and the shoes collectively define a shape substantially corresponding to that of the two recesses of the associated cavity. The friction shoes are fitted into the recesses by passing rivets through the associated sector, the shoes located on each side of the sector loosely receiving the rivets.

3,804,214

DUAL BRAKING SYSTEM FOR A MINING LOCOMOTIVE

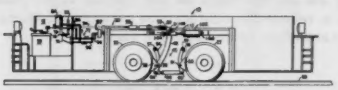
Leon H. Shoemaker, Russell, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 193,655, Oct. 29, 1971. This application Sept. 27, 1972, Ser. No. 292,516

Int. Cl. B61h *13/20*

U.S. Cl. 188—107 **11 Claims**

The braking system includes mechanically actuated apparatus to move the brake shoes into frictional engagement with the locomotive wheels. The mechanically actuated apparatus has a hand wheel suitably mounted in the operator's compartment. The hand wheel is connected to one end of a rotatable screw device. The other end of the rotatable screw device is threadedly secured in a threaded bore of a bracket member. The bracket member is secured to a transversely extending equalizer bar. The equalizer bar is connected by a pair of link members to vertically extending brake levers through a lost motion connection. The vertically extending brake levers are pivotally secured to wheel brake assemblies that include a pair of depending hanger levers to which brake shoes are pivotally connected. The brake assembly includes a wear adjustment device to adjust the position of the brake shoes due to wear. Rotation of the hand wheel moves the bracket and equalizer bar longitudinally and through the link members pivots the vertically extending brake levers. The brake levers, in turn, move the brake shoes into frictional engagement with the wheels of the locomotive and apply a braking force thereto. The fluid actuated auxiliary braking apparatus includes a manually operated hydraulic pump in the operator's compartment connected to a source of hydraulic fluid. The actuating shaft of the pump has a hand wheel connected thereto. One or more piston cylinder servomechanisms are mounted on the locomotive adjacent the equalizer bar with the piston rod connected thereto through suitable overtravel linkages. A check valve assembly is provided to maintain the fluid pressure supplied by the hydraulic fluid pump to the piston cylinder servomechanisms for control of the brake system. The ports of the hydraulic pump are connected by conduits to the inlet ports of the housing of the check valve assembly. The outlet ports of the check valve assembly are connected in turn by conduits to the cylinder on opposite sides of the piston within the cylinder. Rotation of the hand wheel connected to the hydraulic pump in one direction supplies fluid to the piston cylinder assembly to extend the piston rod and move the equalizer bar. The check valve assembly maintains the fluid pressure exerted upon the piston within the cylinder to extend the piston rod. The movement of the equalizer bar moves the brake shoes into frictional engagement with the locomotive wheels through the same linkages associated with the mechanically actuated apparatus. The brake shoes will remain in frictional engagement with the locomotive wheels once the hand brake wheel has been released by operation of the check valve assembly. The rotation of the hand wheel connected to the pump in the opposite direction moves the brake shoes out of frictional engagement with the locomotive wheels. Rotation of the hand wheel in the opposite direction will operate the check valve assembly to release the fluid pressure applied to the piston with the cylinder to retract the piston rod and move the equalizer bar. The amount of frictional force exerted by the brake shoes when actuated by the fluid actuated auxiliary braking system is accurately and positively controlled by operation of the check valve assembly in maintaining fluid pressure supplied by the hydraulic fluid pump.



3,804,215

SPOT-TYPE DISC BRAKE

Hans Albert Bellei, Bad Vilbel, and Jochen Burgdorf, Offenbach, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 248,776, April 28, 1972, which is a continuation of Ser. No. 70,446, Sept. 8, 1970, abandoned. This application May 2, 1973, Ser. No. 356,647

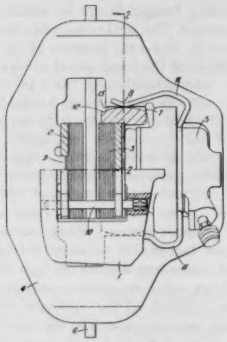
Claims priority, application Germany, Sept. 10, 1969, 1945767

Int. Cl. F16d *55/224*

U.S. Cl. 188—73.4 **1 Claim**

This spot-type disc brake for vehicles has a fixed carrier extended over a brake disc, brake shoes slidably mounted on the

carrier and a slidable frame having sides which engage slots in the carrier to transmit the actuating force from an actuating cylinder and brake shoe on one side of the disc to the brake



shoe on the other side of the disc. The guide surfaces on the carrier are curved about an axis normal to the plane of the frame to reduce the contact area between the frame and the carrier and allow limited tilting of the frame.

3,804,216

SHOCK ABSORBER AND SUSPENSION MECHANISM

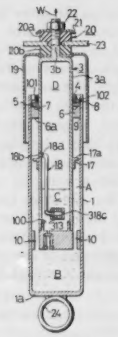
Teiji Katsumori; Yoshisuke Ohsaka, both of Yokohama, and Tetuo Kato, Kawasaki, all of Japan, assignors to Tokico Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Dec. 29, 1971, Ser. No. 213,329

Claims priority, application Japan, Dec. 29, 1970, 45-126612; Apr. 19, 1971, 46-25143

Int. Cl. F16d *9/06, 9/32*

U.S. Cl. 188—314 **1 Claim**



This invention relates to a vibration damping mechanism adapted for use as shock absorber and suspension strut advantageously used on automotive and railroad vehicles.

The mechanism comprises a cylinder mechanically connected with axle-mounting means with a piston slidably mounted in the cylinder. The piston divides the interior space of the cylinder into first and second chambers. The piston is connected rigidly with a piston rod, a substantial portion of which is hollow. The interior space of the hollow piston rod includes an upper high pressure gas chamber and a lower liquid space which is fluidically connected with said second chamber.

The main improvement resides in the provision of a fluid flow-limiting communication means connected and adapted for returning occasionally accumulated gas from the chamber back into the said gas chamber.

3,804,217

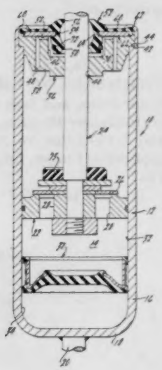
PRESSURIZED SHOCK ABSORBER

Johan H. Keijzer, Hasselt, and Willy R. J. Pierle, Tienen, both of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Filed Mar. 13, 1972, Ser. No. 234,052

Int. Cl. F16f *9/36*

U.S. Cl. 188—322 **9 Claims**



A shock absorber comprising a generally cylindrical pressure cylinder, a piston reciprocally disposed within the cylinder, a piston rod affixed to the piston and extending coaxially from one end of the cylinder, a rod guide adjacent one end of the cylinder defining a central bore through which the piston rod extends, and a piston rod seal disposed axially outwardly from the rod guide and adapted for sealing engagement with the outer periphery of the piston rod.

3,804,218

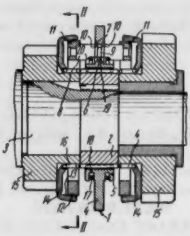
INERTIA SPEED SYNCHRONIZER

Anatoly Vasilievich Krutashov, Kuzminskaya ulitsa, 22, kv. 18, Moscow, U.S.S.R.

Filed Dec. 30, 1971, Ser. No. 214,230

Int. Cl. F16d *23/06*

U.S. Cl. 192—53 E **2 Claims**



The synchronizer has a spline coupling in the disk part of which there are made through holes with interlocking faces. Passing through these holes are pins that carry a ring with a conical face interacting with the conical face of the meshing part of the gearbox. Formed on the pins are interlocking faces

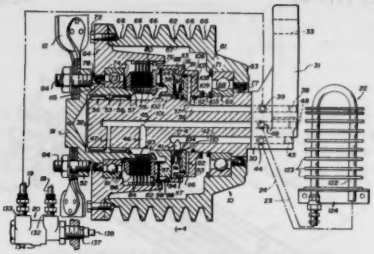
which at the moment of synchronization contact the interlocking faces of the coupling, and slots with fixing surfaces which interact with a springy element disposed aside of the disk of the coupling.

3,804,219

TEMPERATURE MODULATED VARIABLE SPEED DRIVE AND CONTROL THEREFOR

Gordon F. Cummings, III, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 20, 1972, Ser. No. 307,883
Int. Cl. F16d *11/04, 25/02, 23/00*
U.S. Cl. 192—82 T 5 Claims



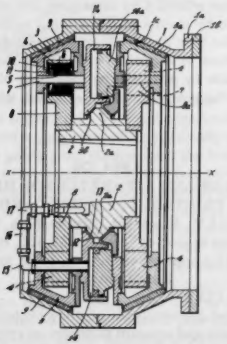
A temperature modulated variable speed drive includes a wet type friction clutch designed for operation in the slip range between full engagement and full release. Output speed is controlled by regulating the net engaging force applied to the friction members of the clutch. The net engaging force results from a temperature regulated air pressure acting in opposition to a preloaded spring in the engaging mechanism.

3,804,220

CLUTCH-COUPLING ASSEMBLY

Peter Szynka, Witten/Ruhr, Germany, assignor to Lohmann & Stollerfoht Aktiengesellschaft, Witten/Ruhr, Germany

Filed Dec. 11, 1972, Ser. No. 314,215
Claims priority, application Germany, Dec. 17, 1971, 2163820
Int. Cl. F16d *25/12, 7/00*
U.S. Cl. 192—85 AB 11 Claims



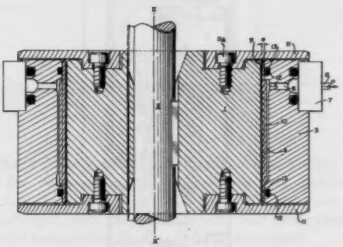
A friction clutch-resilient coupling has a clutch input, a disk as coupling output and a hydraulically operated movable clutch member which is also the input for the coupling. The coupling includes plural, coaxial, sleeve-rubber-sleeve elements distributed in annularly arranged apertures of the disk and having their inner sleeves bolted to the clutch member. Specific examples of such assemblies are explained with reference to a double cone friction clutch and a twin friction disk clutch, having two movable clutch members as well as two such disks. The resilient elements are always biased tending to disengage the clutch.

3,804,221

FRICTION COUPLING WITH FLUID OPERATED DIAPHRAGM

Alfred Valantin, Clermont, France, assignor to Charbonnages De France, Paris, France

Filed Mar. 30, 1972, Ser. No. 239,636
Claims priority, application France, Apr. 6, 1971, 71.12169
Int. Cl. F16d *25/04*
U.S. Cl. 192—88 B 2 Claims



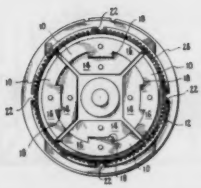
A friction coupling device for effecting clutching or braking action between two relatively movable members, has a thin flexible partition between opposed surfaces of those members, one of which surfaces is recessed to receive protuberances on the partition which is sealed against that surface to define an expansible chamber which communicates with a supply of pressurised hydraulic fluid which causes the partition to deform against the surface of the other member to provide the desired coupling.

3,804,222

CLUTCH WITH CENTRIFUGAL ENGAGING AND RELEASING WEIGHTS

William H. Reams, Boonsboro, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

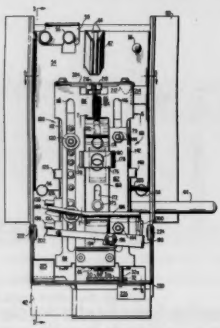
Filed Mar. 16, 1972, Ser. No. 235,205
Int. Cl. F16d *43/14*
U.S. Cl. 192—103 B 4 Claims



A centrifugal clutch for transmitting rotary motion from a first rotating shaft to a second rotatable member, only when the first rotating shaft has an angular speed of a value between predetermined upper and lower angular speeds, including a first circular plate fixed to the rotating shaft. A pair of spring

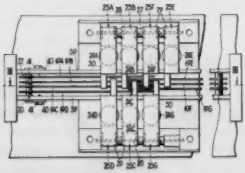
biased members having shoulders formed on the outer edges thereof are pivoted to the circular plate and are adapted to move outwardly during rotation at a sufficient angular speed. The first circular plate is received by four arcuate shoes radially slidably mounted on a second circular plate and include inwardly extending projections formed thereon adapted to engage the shoulders. After rotational speed increases beyond a predetermined upper limit, the shoes move outwardly relative to the plate and disengage the clutch.

3,804,223
COIN OPERATED LATCH CONTROL MECHANISM
Henry Carl Voegeli, 918 Gibbs Rd., Venice, Fla.
Continuation of Ser. No. 42,750, June 2, 1970, abandoned. This application Nov. 14, 1972, Ser. No. 306,455
Int. Cl. G07f *11/14*
U.S. Cl. 194—71 **6 Claims**



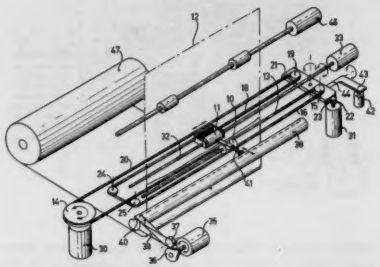
A vending machine and a coin operated latch control mechanism therefor which is readily manually adjustable for operation at various coin combinations totalling different prices. The coin mechanism includes a number of pawls mounted on a channel support member with free-floating pivotal motion to substantially eliminate any binding of the pawls during use of the mechanism.

3,804,224
MATRIX PRINTER
Bernard Sydney Barnaby, Ware, and Cyril Walter Coe, Wembley, both of England, assignors to The General Electric Company Limited, London, England
Filed July 6, 1971, Ser. No. 159,977
Int. Cl. B41j *1/18*
U.S. Cl. 197—1 R **8 Claims**



A tape printer which prints characters in the form of dots disposed in a 7 × 7 or 7 × 5 matrix has seven print elements which are arranged to be operated selectively to print one line across the tape at a time by pressing carbon paper against the tape. Each print element is provided by a projection from a pivotted member which is controlled by an associated electromagnet. These members and the electromagnets are arranged in such a way that false operation of a print element (when an adjacent print is operated) is minimised and so that the printing pressure exerted by all the print elements is approximately the same.

3,804,225
DEVICE IN A TYPE PRINTER
Carl-Otto Ulin, Jack, 17500, Jakobsberg, Sweden
Filed Aug. 30, 1972, Ser. No. 284,959
Claims priority, application Sweden, Aug. 31, 1971, 11034/71
Int. Cl. B41j *1/32*
U.S. Cl. 197—49 **3 Claims**

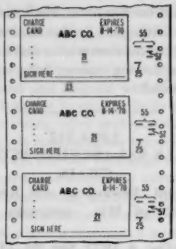


A motion mechanism in a type printer, wherein the axial displacement of a type drum relative to a printing hammer for setting the required type in position opposite the hammer, and the axial movement of both hammer and type drum for obtaining a new printing position on the sheet, is effected by means of a cord system which consists of a single cord, a type of endless chain. The cord runs over pulleys arranged at each end of the line to be printed, such that the cord is divided into four cord parts extending substantially parallel to the line on the sheet, one cord part supporting the hammer, and one supporting the type drum. At one side, two pulleys are arranged in spaced relationship on a plate which is mounted pivotally about an axis lying intermediate the rotational axes for the two pulleys. Furthermore the cord co-operates with a driving motor operating on that part of the cord which leads to the hammer. Setting of the hammer to a new printing position on the sheet is then effected by displacing the whole cord in its length direcion by means of the driving motor, whereby the hammer and the type drum will move equal distances. Setting of the type drum to a posion with a new type opposite the hammer is made by pivoting the mounting plate for the pulleys, whereby the type drum only is moved, while the hammer is held fixed.

3,804,226
METHOD OF AND APPARATUS FOR HIGH SPEED PRINTING OF CREDIT CARDS
Jonas Ellis, 4665 W. Maple Rd., Birmingham, Mich.
Continuation-in-part of Ser. No. 885,450, Dec. 16, 1969, abandoned. This application Oct. 25, 1972, Ser. No. 300,679
Int. Cl. B41j *15/00*
U.S. Cl. 197—133 R **6 Claims**

A method and apparatus for printing customer data such as names, addresses and account numbers on credit or identification cards, such printing being of high quality and accomplished economically and at high speed. The cards are mounted on continuous web paper of the kind used in high speed line printers, and, coincidentally with such mounting, one or more line marks for each card are printed or otherwise

recorded on the web paper bearing a predetermined relative position with respect to the printing lines of each card. The web paper with the mounted cards and corresponding line marks is then processed through a computer responsive high



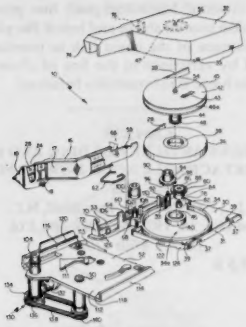
speed line printer where the customer data is printed, the line marks serving to control the web paper advancing and stopping means of the line printer to stop the web paper with the printing lines of the cards located precisely in printing position.

3,804,227

TYPEWRITER RIBBON CARTRIDGE

Samuel D. Cappotto, Syracuse; Herrick R. Diamond, Homer, and Aaron C. Zeamer, Groton, all of N.Y., assignors to SCM Corporation, New York, N.Y.

Filed May 3, 1972, Ser. No. 250,013
Int. Cl. B41j *33/14*
U.S. Cl. 197—151 **4 Claims**



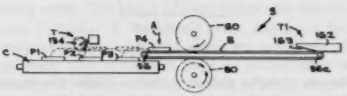
A cartridge for housing a supply of ribbon for a typewriter or like machine is disclosed. The cartridge includes a housing having a base and a cover and an arm laterally extending from the housing for guiding the ribbon from the housing to a print point and back to the housing. The arm is mounted on an open fulcrum on the base for pivotal movement at an oblique angle to the base and is normally spring biased to a rest position. The base includes a circular storage compartment having a hollow concentric hub therein for storing a roll of ribbon freely rotatable around the hub. A takeup spool rests on top of the hub and has an integral axial shaft with a gear at its opposite end which passes through the hollow hub to engage a drive gear in the machine. A friction roller is provided for cooperation with a drive roller in the machine to pull the ribbon from the supply through the arm and feed it back into the housing where it is wound upon the takeup spool. An upstanding flange is provided on the base to adjust the plane of the ribbon after it leaves the arm prior to its engagement by the friction and drive rollers. A pair of geared rollers are provided for regulating the tautness of ribbon pulled from the supply roll. A first of the geared rollers is rotated by the ribbon entering upon the takeup spool. Rotation of this roller drives the second geared roller adjacent the supply roll. If the ribbon from the supply roll is taut it will be frictionally engaged by the second roller and driven thereby thus decreasing the tautness. If the ribbon is not taut then the second roller will merely rotate without sufficient frictional engagement with the ribbon to drive it. The takeup spool has a flexible detent finger formed in its upper flange which cooperates with a circular detent train on the inner surface of the cover to prevent unwinding of the ribbon on the takeup spool.

3,804,228

SPREADER CONVEYOR

Eugene F. Felstehausen, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 28, 1972, Ser. No. 284,301
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AB **13 Claims**



A spreader conveyor is shown connected to a meat patty machine for receiving patties individually and distributing them across the width of a discharge conveyor such as a freezer conveyor, with the spreader conveyor being operated by a variable speed drive from a patty machine shaft.

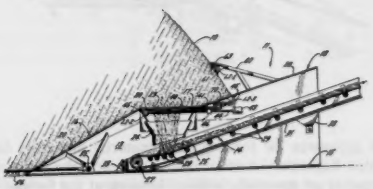
The spreader conveyor has a rigid frame with an endless wire conveyor belt trained around the ends of the frame. The entire frame and conveyor are reciprocated in a manner which does not require take up of an extra loop in the flexible conveyor belt. This is accomplished by advancing both conveyor reaches in the frame by upper and lower sprockets moving in the same direction whereas the conveyor frame is rapidly retracted to deposit patties onto the discharge belt by reversing the lower sprocket and driving it at a higher speed than the upper sprocket, which runs continuously in the advance direction. Thus the upper reach of the conveyor continues to be driven in its original direction whereas the conveyor frame and the delivery end of the belt are retracted, thereby dropping a row of patties onto the discharge belt.

3,804,229

STOCKPILE RECLAIMING APPARATUS

Darwin Clark Baldwin, Jr., 921 River Ln., Rockford, Ill.

Filed Apr. 2, 1973, Ser. No. 347,070
Int. Cl. B65g *59/00*
U.S. Cl. 198—36 **8 Claims**



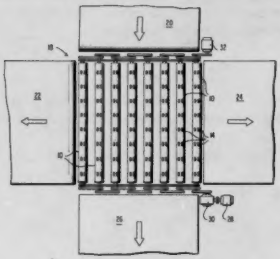
A material receiving unit is pulled along the ground and through the stockpile by a winch-driven cable. Material from the pile flows downwardly into a chamber within the unit and is discharged out of the rear of the unit by a conveyor located in the chamber to catch the downwardly flowing material.

3,804,230

CONVEYOR TRANSFER STATION

Bert Krivec, Waukesha, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Feb. 8, 1973, Ser. No. 330,522
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **14 Claims**



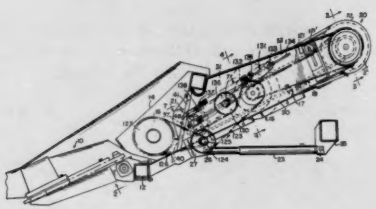
A conveyor transfer station permitting selective transfer of articles being carried on one or more incoming conveyors on to a selected one of a plurality of outgoing conveyors. The transfer station comprises a plurality of roller assemblies, each of which in turn comprise a hollow cylindrical roller having a plurality of spaced apertures in the surface thereof, a plurality of stub rollers mounted in the hollow roller such that their axes of rotation are not parallel to the axes of rotation of the hollow roller and a portion of their surfaces protrude through corresponding apertures in the hollow roller, and means for rotating the hollow roller and the stub rollers independently.

3,804,231

CORN HEADER WITH VARIABLE SPEED POWER TRAIN FOR FEEDER

Arved Maiste, Ontario, Canada, assignor to White Motor Corporation of Canada, Limited, Brantford, Ontario, Canada

Filed Sept. 25, 1972, Ser. No. 291,890
Int. Cl. B65g *19/00*; **F16h** *55/22*
U.S. Cl. 198—174 **13 Claims**



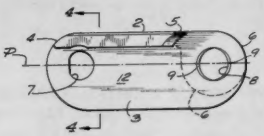
An apparatus for feeding crop material upwardly into a combine harvester which includes a feeder chain conveyor mounted in an upwardly inclined housing at the forward end of the combine and extending between a cross auger at the upper end of a crop gathering head and a point of entry to the main portion of the combine structure wherein a variable speed power train is provided for driving the feeder conveyor which is mounted outside the feeder housing and which comprises an upper shaft assembly having inner and outer shaft members with a power input pulley on one end of the inner shaft and an adjustable output sheave on the other end having a rotating cam-type variable speed control hub permitting the use of a single acting hydraulic cylinder for controlling sheave adjustment, which output sheave has a belt connection to a spring tensioned adjustable sheave on a variable speed countershaft on which there is a sprocket for a chain drive connection with a sprocket on the outer shaft member of the upper shaft assembly for driving the feeder chains and also an output sheave for driving connection with a main countershaft which is adapted to have driving connections with the cross auger and the gathering head.

3,804,232

STRUCTURALLY BALANCED PLASTIC CONVEYOR CHAIN

Edward S. Freiwald, Pewaukee, and Ronald E. Thomson, Cambridge, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Dec. 4, 1972, Ser. No. 311,969
Int. Cl. B65g *15/30*
U.S. Cl. 198—195 **3 Claims**



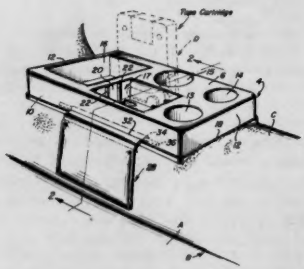
A molded plastic conveyor chain link is constructed such that the pitch line of the link is offset upwardly from the horizontal centerline of the link. The relative increase in the volume of link material below the pitch line provides more nearly equal section moduli above and below the pitch line. As a result, the resistance of the chain link to transient bending stresses induced by variations in the line of chain pull vertically from the pitch line is substantially balanced.

3,804,233

MISCELLANEOUS ARTICLE HOLDING AND STORING TRAY WITH DETACHABLE HOLD-DOWN ANCHORING MEANS

David F. Gregg, Jr., P.O. Box 533, Fair Bluff, N.C.

Filed Oct. 26, 1972, Ser. No. 301,116
Int. Cl. B60r *7/00*
U.S. Cl. 206—19.5 R **3 Claims**



A multi-purpose article holding and occupant accommodating plastic tray which lends itself to readily applicable and removable use atop an existing tunnel-hump in present-day

automobiles. The tray is characterized by a horizontal top formed with a plurality of selectively usable well-like receivers providing open top holders, said top having a depending marginal supporting rim which, in turn, embodies smooth interior sidewalls joined by intervening transverse end walls. At least one of the holders is of a size and shape to adaptably receive one or more insertable and removable conventional tape cartridges for selective retention and use. For best results the end walls of the stated holder are provided with interior inwardly projecting spaced parallel vertical main ribs. The ribs on one end wall are disposed and aligned with the main ribs on the other end wall in a manner to engage body surfaces of the tape cartridge and, in so doing, they seat and safely but accessibly locate the cartridges in readiness for selective use. These main ribs provide guideways for the cartridge or cartridges, as the case may be. The upper surface of the bottom wall is provided with a plurality of upstanding auxiliary ribs which constitute elevating rests atop which bottom surface portions of the tape cartridges reside, that is in a manner to minimize likelihood of sticking and interfering with ready removal for use. Weighted tray positioning and hold-down bags with upwardly inwardly disposed longitudinal edge portions are provided with stick holding hems which are detachably and adjustably connected with median slotted portions of the respective sidewalls.

3,804,234

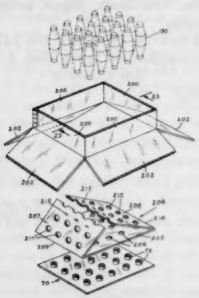
CASE FOR SHIPPING ARTICLES IN AN UPRIGHT POSITION AND IN SPACED LATERAL SEPARATION

Robert Louis Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 36,554, May 12, 1970, Pat. No. 3,624,776. This application Mar. 16, 1971, Ser. No. 124,775

Int. Cl. B65d *71/00*

U.S. Cl. 206—65 Y **41 Claims**



The case comprises wall panels, one or more bottom and top flaps and a bottom assembly comprising (*i*) a bottom indexing panel which engages the bottom of the article by means of one or more projections rising upwardly therefrom and (*ii*) means for preventing any substantial lateral movement of the bottom indexing panel within the case. The top assembly of the case comprises (*i*) a top indexing panel containing female recesses projecting upwardly therefrom which fit over the top of the article and (*ii*) an internal top panel containing apertures which fit snugly over the female recesses to lock the top indexing panel in position. An article separator layer assembly is provided when the case is to contain a plurality of layers of articles.

3,804,235

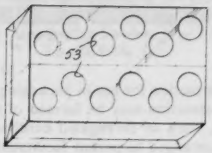
WRAPPER SHEET WITH OPENINGS AND METHOD OI PRODUCTION

Andrew W. Anderson, 18 Sunset Rd., West Caldwell, N.J.

Continuation-in-part of Ser. No. 845,841, July 29, 1969, Pat. No. 3,654,829. This application Aug. 19, 1971, Ser. No. 173,094

Int. Cl. B65d *65/20, 71/00, 85/62*

U.S. Cl. 206—65 S **12 Claims**



A package comprising an article having a sheet of heat shrinkable material wrapped therearound and a method for producing same. The sheet of heat shrinkable material has at least one opening. A thickened ridge has been formed by uniformly heating the material along the periphery of each of the openings. The thickened ridge or ribbed edge defines a reinforcement which prevents tearing of the material used in the wrapping process due to handling or subsequent heat shrinking of the heat shrinkable material about the article. In a specific embodiment of this invention, the reinforced hole is formed in a web of heat shrinkable material by cutting a shaped punching in the web and completely removing the shaped punching from the web of material.

In another embodiment of the invention, the method provides a heated punch member having a cutting edge and a flexible base portion with an opening disposed therein. The web of material is fed between the flexible base portion and the heated punch member. The punch member is thrust against the flexible base portion to cut through the web thereby removing a punching to form a hole therein and to substantially simultaneously provide a uniform heating along the periphery of the hole. The heat shrinkable material may be selected from the group consisting of oriented polypropylene and non-oriented polypropylene.

3,804,236

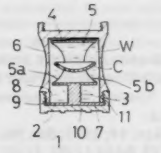
PROTECTIVE HOLDER FOR SOFT CONTACT LENS

Kyoichi Tanaka, Chikusa-ku, Japan, assignor to Toyo Contact Lens Co., Ltd., Nagoya, Japan

Filed Oct. 13, 1972, Ser. No. 297,340

Int. Cl. A45c *11/04*

U.S. Cl. 206—205 **7 Claims**



A protective holder for a soft contact lens, which holds the lens against any undesirable displacement during storage in a container when it is not being worn, keeps the lens in a sterile condition, and protects the lens against being damaged during insertion into or removal from the container.

This invention relates to a holder which keeps a soft contact lens safe from being scratched when it is put into or taken out of a case, and which keeps the lens clean when it is held within the case.

3,804,237
PACKAGE CONSTRUCTION

Delbert L. Christensen, and James A. Kalin, both of Elmhurst Ill., assignors to Flex-O-Glass, Inc., Chicago, Ill.

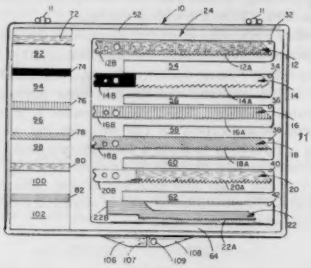
Filed June 5, 1972, Ser. No. 259,745
Int. Cl. B65d *85/00*
U.S. Cl. 206—451 17 Claims

A carton construction for use in packaging sheet materials. The carton construction may be formed of a single sheet of folded material, such as corrugated cardboard. The carton construction is arranged to permit facilitated removal of the sheets as desired while providing a facial frictional force tending to prevent lateral translation of the individual sheets in the carton construction in shipment.

3,804,238
DISPLAY CASE FOR SABRE SAW BLADES

Joel A. Howard, Cliffside, N.J., assignor to Howard Hardware Products, Inc., Bloomfield, N.J.

Filed Dec. 10, 1971, Ser. No. 206,783
Int. Cl. B65d *85/20, 1/36, 25/54*
U.S. Cl. 206—459 7 Claims

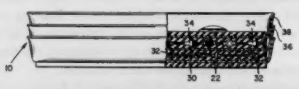


A compartmental storage container in which a plurality of saw-tooth blades, different from one another in saw-tooth configuration, are removably storageable in isolated relation in respective compartments. A color-code arrangement is provided for associating the saw-tooth blades with respective compartments therefor and distinguishing the operative function of the respective saw-tooth configurations of the blades from one another.

3,804,239
METHOD AND ARTICLE FOR STORING, TRANSPORTING, AND DISPLAYING ARTICLES

Lloyd J. O'Brien, Newark, N.Y., assignor to Sarah Coventry Inc., Newark, N.J.

Filed Apr. 14, 1972, Ser. No. 244,110
Int. Cl. B65d *21/00, 81/02, 85/62*
U.S. Cl. 206—503 12 Claims

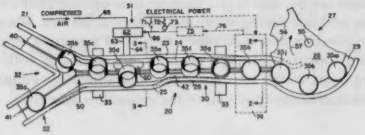


A plurality of nestable or stackable trays each including a separate foam pad forming the upper and lower surfaces of the bottom wall of the tray. Jewelry or other articles are placed in a plurality of such trays and the trays are then stacked one on top of the other, so that each article is firmly held, for storage and/or for transportation, between the upper foam pad of the lower tray and the lower foam pad of the upper tray. The articles are easily displayed by simply removing the tray above the tray containing the articles to be displayed.

3,804,240
ARTICLE SEGREGATING APPARATUS

Stanley D. Wahlert, Westchester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 30, 1973, Ser. No. 383,927
Int. Cl. B07c
U.S. Cl. 209—73 5 Claims

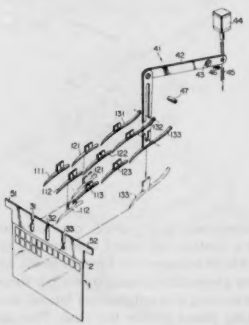


Article segregating apparatus comprising two conveyors having side-by-side portions and divergent portions in which apparatus a file of articles is received on the side-by-side portions, each received article is tipped so that it leans against and slides along a side guide and is in contact with only one conveyor, then selected articles are tilted so that they lean against and slide along a second side guide and are in contact with only the second conveyor. The apparatus further comprises guides for insuring that the tilted articles follow the second conveyor and that the tipped articles follow the first conveyor from the point of divergence of the two conveyors.

3,804,241
CARD IDENTIFYING METHOD

Hajime Yamashita, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,165
Claims priority, application Japan, Dec. 2, 1971, 46-97652
Int. Cl. B07c
U.S. Cl. 209—110.5 9 Claims



A method of selecting a desired card from a large number of cards haphazardly stored in card case by inserting selectors in a plurality of sections of a plurality of notches formed in a marginal portion of each card. Each card is numbered and has a corresponding code mark in the form of narrowed-width

portions in the corresponding sections of the corresponding notches of the card. When the selectors are inserted in the sections of the notches of all the cards corresponding to the positions of digits of the numeral given to the desired card as its code mark, the selectors catch against the narrowed-width portions of sections and cards having such portions are selected till the desired card is located. Insertion of the selectors is repeated a number of the times corresponding to the number of digits of the numeral given to the desired card as its code mark.

3,804,242

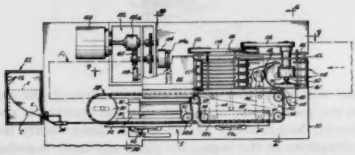
PHOTOELECTRIC ARTICLE SORTER

Leonard H. Tall, Mercer Island; Paul A. Carlstedt, and Arlen J. Erickson, both of Seattle, all of Wash., assignors to CX Processing Laboratories, Inc., Seattle, Wash.

Division of Ser. No. 133,885, April 14, 1971. This application Dec. 6, 1972, Ser. No. 312,715

Int. Cl. B07c *5/342*

U.S. Cl. 209—111.6 **5 Claims**



A processor's method and apparatus is disclosed by which previously inspected and quality-marked prints of a customer's order are fed successively past a photoelectrically controlled sorting diverter which directs individual prints either into a reject chute or into selected storage compartments of a tilting loader for reprinting or customer delivery, respectively, such loader having an additional compartment to receive the associated cut films of an individual customer's order. Thereupon the loader, by a decelerating motion, dumps the contents of its respective compartments downwardly with the help of gravity and momentum into the open pockets formed between leaves of a carrier stock section positioned at the loading station and thereafter fed beyond the loading station for detachment from the body of carrier stock by tearing. A first stretch of feed chain advances the carrier stock to the loading station and a second stretch advances the loaded section of carrier stock beyond the loading station where it is torn from the body of the carrier by effecting relatively longitudinal movement between the chain stretches preferably along a preformed score line. Positive engagement of pins on the feed chain with holes in the carrier stock permits feeding and tearing off the sections successively. Separator mechanism coordinated with the tearing mechanism thereafter frees the severed section from the body of stock. Guides progressively spread apart the leaves of the carrier stock on approaching the loading station. Inspection grade marks of a color, contrasting with that of the control marks customarily applied to the print roll margins to time the cutting and the end-of-order stopping of a print cutter, are applied by an inspector and are sensed photoelectrically to control operation of the diverter and a pricing computer.

3,804,243

SEPARATION OF MICA FROM CLAY BY FROTH FLOTATION

David C. Yang, Edison, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Filed June 26, 1972, Ser. No. 266,159

Int. Cl. B03d *1/02*

U.S. Cl. 209—166 **5 Claims**

Mica, present as an impurity in kaolin clay, is removed from the clay by froth flotation in an alkaline pulp with a complex phosphate ester of a nonionic surfactant of the ethylene oxide-adduct type, using an aluminum salt to activate the flotation of the mica.

3,804,244

TOROIDAL VORTEX CLEANER

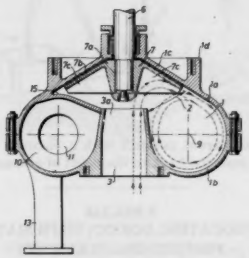
Karl Arvid Skardal, Artillerigatan 48, 114 Stockholm, Sweden

Filed May 18, 1972, Ser. No. 254,468

Claims priority, application Sweden, May 21, 1971, 6600/71

Int. Cl. B04c *3/00*

U.S. Cl. 209—211 **18 Claims**



A vortex cleaner for removing impurities from fibre suspensions, in particular high-consistency pulp and paper-stock suspensions, comprises a toroidal vortex chamber, which is provided with an annular, slot-shaped inlet opening for the fibre suspension to be treated extending coaxially relative the axis of symmetry of the toroidal vortex chamber, and means for injecting the fibre suspension to be treated into the vortex chamber through said annular inlet opening substantially over the entire length thereof in such a manner that the injected fibre suspension has a direction of flow in each point along the annular inlet opening, which includes a substantial flow component which is tangential relative the cross-section of the vortex chamber at said point, whereby the injected fibre suspension forms a helical vortex flow in the vortex chamber about the circular center line of the toroidal vortex chamber. An internal, generally radial partition wall is provided in the toroidal vortex chamber and has a substantially centrally disposed opening with a substantially smaller diameter than the cross-sectional diameter of the vortex chamber. A discharge conduit for the accept fraction of the fibre suspension being treated is connected to said opening in said partition wall on the one side of the partition wall and a discharge opening for the reject fraction of the fibre suspension being treated is disposed in the wall of the toroidal vortex chamber close to said partition wall on the opposite side thereof.

3,804,245

APPARATUS FOR CLASSIFICATION OF PARTICULATE MATERIALS

Frank P. Pendleton, Montclair, N.J., assignor to Vac-U-Max, Belleville, N.J.

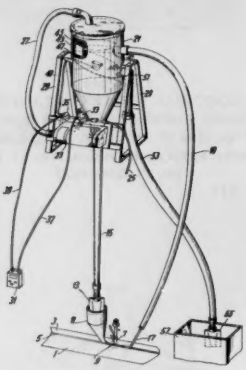
Filed July 11, 1972, Ser. No. 270,808

Int. Cl. B07b *7/00*

U.S. Cl. 209—240 **3 Claims**

An enclosed Hopper connected to a vacuum source is fitted with an inclined vibratory screen. A flexible conduit delivers

material from a point of consumption to impinge on an abrasion resistant liner on the inner wall of the hopper above the



screen. A transparent conduit with a vacuum valve delivers the screened material back to the point of consumption.

3,804,246

RECIPROCATING SCREEN WITH MATERIAL POSITIONING ELEMENTS

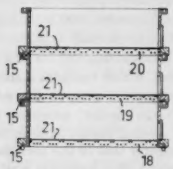
Karl Johan Ljungqvist, Skoghall, Sweden, assignor to C. J. Wennberg AB, Karlstad, Sweden

Filed May 27, 1971, Ser. No. 147,437

Claims priority, application Sweden, June 11, 1970, 8112/70

Int. Cl. B07b *1/12, 1/46*

U.S. Cl. 209—264 **4 Claims**



A screen arrangement for testing chip samples comprising a reciprocating frame and screen boxes fixed thereto has the screen boxes provided with screen bottoms of parallel rods or similar elements and control elements located at an angle to said rods to orientate waste materials such as sticks mixed with the chips at an angle, particularly at right angles to said rods to improve the separation of the sticks from the chips. The control elements can also consist of rods mounted in suitable spaced relation to one another.

3,804,247

METHOD AND APPARATUS FOR WASHING AND SIZING MATERIALS

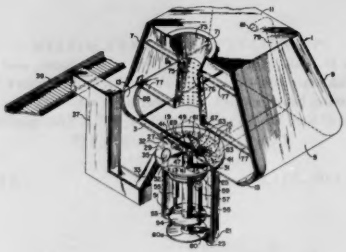
John A. Miscovich, Orange, Calif., assignor to Marcona Corporation, San Francisco, Calif.

Filed Oct. 27, 1972, Ser. No. 301,644

Int. Cl. B07b *1/04*

U.S. Cl. 209—273 **16 Claims**

Particulate material to be washed and sized is fed downwardly into the tank through the vertical perforated feed passageway and onto the perforated cone member and the surrounding perforated separator plate. Water under pressure discharged radially outwardly from the rotating nozzle mounted within the cone member and particulate material conveyed thereby is directed in a generally semi-circular path by the arcuate walls of the tank and impacts against the outer surface of the perforated passageway breaking up agglomerates of sticky clay containing mineral values and forcing water and small particles of material through the perforations in the passageway and back into the interior of the feed passageway. Small, sized particles pass downwardly through the perforations in the separator plate and cone member and into a sump while large particles which cannot pass through the perforations collect on the floor of the tank outwardly of the separator plate.



3,804,248

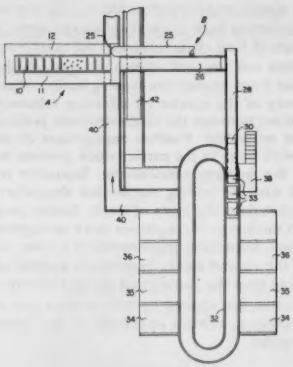
SORTATION SYSTEM

Rudolph Talamantz, No. 9 Oldham Rd., Silver Spring, Md.

Filed Dec. 30, 1971, Ser. No. 213,904

Int. Cl. B03c *7/00*

U.S. Cl. 209—125 **10 Claims**



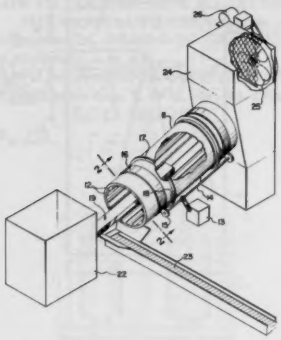
A sorting system dealing with the handling of refuse for removing and collecting the desired material, in a systematic manner whereby the same can be readily removed for reuse. Briefly, the method entails the continual segregation of the refuse material by passing the same over a series of conveyors and ultimately introducing the reusable portion into a rotary sorting table having individual trays which are capable of tilting the contents thereof in a receiving bin positioned about the outer peripheral edge of the table.

3,804,249

AIR DRUM SORTER FOR SOLID WASTE

Joseph B. Gibbons, and Francesco A. Passanti, both of Schenectady, N.Y., assignors to General Electric Company, Indianapolis, Ind.

Filed Oct. 30, 1972, Ser. No. 302,190
Int. Cl. B07b 3/00
U.S. Cl. 209—473 14 Claims



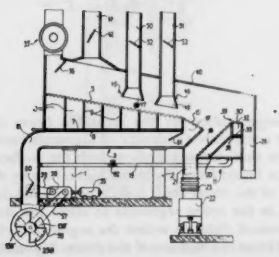
A large rotating drum with its axis inclined to the horizontal, through which flows a stream of air, sorts mixed solid waste on a municipal scale into heavy and light waste components. Residential-commercial or other solid waste admitted to the central portion of the drum is tumbled continuously by the rotating drum and its interior lifter vanes. Heavy waste gravitates toward the lower end of the drum while light waste is propelled by the air stream out of the upper end of the drum.

3,804,250

STRATIFIER WITH DISCHARGE MEANS FOR MAINTAINING STRATIFIED LAYERS

George Dankesreiter, Oberburen, Switzerland, assignor to Gebrueder Buehler AG, St. Gallen, Switzerland

Filed Apr. 26, 1971, Ser. No. 137,451
Claims priority, application Switzerland, Apr. 29, 1970, 6430/70
Int. Cl. B03b 3/16
U.S. Cl. 209—475 16 Claims



A stratifier wherein means are provided for discharging the various stratified layers without disturbing the stratified condition of the remaining layers. Such means may include suction means spaced above the layers or an extra pulsated flow of gas at the lower end of the bed to maintain the stratified condition of material discharging therefrom. Treating of the materials in the stratified bed is also disclosed.

3,804,251

FLOATAGE COLLECTING APPARATUS AND METHOD

James H. Farrell; Ralph A. Bianchi, both of Lexington, and Edward E. Johanson, Lynnfield, all of Mass., assignors to JBF Scientific Corporation, Burlington, Mass.

Continuation-in-part of Ser. No. 151,838, June 10, 1971, abandoned. This application Mar. 6, 1972, Ser. No. 231,977
Int. Cl. B01d 21/00
U.S. Cl. 210—83 22 Claims

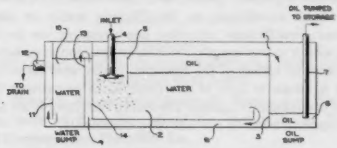
Apparatus and method for removing floating material from the surface of a body of liquid and for collecting the material has an endless belt-type materials transport mounted, as by rollers with vertically-separated horizontal rotation axes, to dispose the transport with a lower flight inclined downwardly from above the liquid surface at a frontal location to below the surface at a rearward location. A collection well is contiguously behind the rearward location. The transport is driven to advance the lower flight in the direction from the frontal location to the rearward location. This motion carries floating material from the liquid surface downward and rearward under the lower flight of the transport and releases it at the rearward location to float upward into the collection well. A method for floatage collection by steps that the foregoing apparatus performs is also disclosed.

3,804,252

PROCESS AND APPARATUS FOR THE SEPARATION OF LIQUID MIXTURES

Richard C. Rishel, 414 Defiance Ave., Findlay, Ohio

Filed Jan. 3, 1972, Ser. No. 214,674
Int. Cl. B01d 17/02
U.S. Cl. 210—84 3 Claims



The present invention relates to the separation of liquids of different specific gravities and to apparatus therefor, compris-

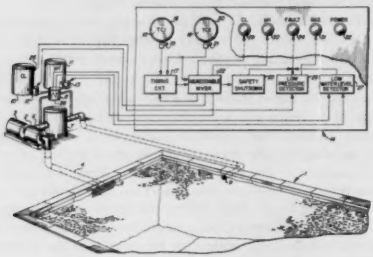
ing, preferably, a horizontal cylindrical tank divided into compartments, into one of which the mixture to be separated is introduced and in which the mixture separates into its individual components which form distinct layers, the upper, lighter layer flowing over a wier into a second compartment from which it is removed as desired, and the heavier, lower layer entering, at a point remote from the inlet of said mixture into said first compartment, into a conduit which directs said heavier liquid through a hydraulic trap into a third compartment in which said heavier liquid is maintained at a level lower than that of the mixture of liquids in said initial settling compartment, and from which third compartment said heavier liquid is subsequently removed.

3,804,253

SYSTEM FOR AUTOMATICALLY MAINTAINING CHLORINE CONCENTRATION AND PH OF SWIMMING POOL WATER AT PREDETERMINED LEVELS

Russell W. Weilman, Colfax, Calif.; Sidney L. Harrell, Scottsdale, and Don H. Young, Phoenix, both of Ariz., assignors to Waterguard Systems, Inc., Phoenix, Ariz.

Filed Jan. 29, 1973, Ser. No. 327,566
Int. Cl. B01d *35/14*
U.S. Cl. 210—85 **9 Claims**



First and second time clocks are utilized to set electronic circuitry, respectively, to a scheduled rate of chlorine injection cycles and to alternate selection of chlorine injection or injection of a pH correction material into a mixing chamber disposed in series with swimming pool pumping and filtering apparatus. The electronic circuitry includes an adjustable timer circuit which determines the duration between injection cycles, a monostable multivibrator which determines the duration of the injection phase, and fault detector circuits to indicate such conditions as: insufficient water in the mixing chamber, insufficient chlorine gas pressure, or an injection phase which is too lengthy. Faulty indication is removed upon correction of either of the first two faults, and direct disabling action is taken in case of the latter fault to protect the water system components against corrosion resulting from an unduly high concentration of the additive chemicals.

3,804,254

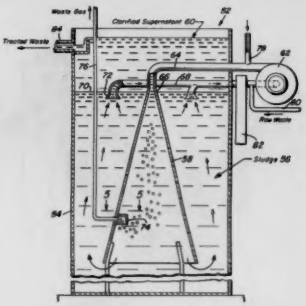
Patent Not Issued For This Number

3,804,255

RECYCLING GAS CONTACT APPARATUS

Richard E. Speece, Drexel University, Philadelphia, Pa.

Filed Oct. 18, 1972, Ser. No. 298,576
Int. Cl. B03d *1/00*
U.S. Cl. 210—194 **8 Claims**



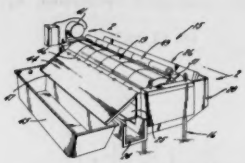
Recycled fluent material confined to a downflow stream of decreasing velocity within a gas transfer device to absorb a gas by prolonged contact therewith. The gas is injected as bubbles in the flow stream. The fluent material is recycled through the gas transfer device from an upper portion within a tank just below an upper surface or interface maintained at a predetermined level.

3,804,256

MAGNETIC SEPARATOR WITH IMPROVED SQUEEGEE ROLLER

Roger Marriott, and Mark R. Estabrook, both of Rockford, Ill., assignors to Barnes Drill Co., Rockford, Ill.

Filed Aug. 14, 1972, Ser. No. 280,664
Int. Cl. B01d *35/06, 33/02*
U.S. Cl. 210—222 **8 Claims**



A squeegee roller for the rotatable drum of a magnetic separator comprises a plurality of segments each mounted on a common shaft for engagement with the surface of the drum to squeeze liquid from the swarf picked up by the drum. The diameter of the roller shaft is smaller than the diameter of the openings in the roller segments to allow the shaft to move a predetermined distance within the segments before lifting the segments from the surface of the drum. Normally, the shaft is spring biased to hold the segments tightly against the surface of the drum. As the drum rotates, a follower thereon engages a cam to overcome the spring and lift the shaft a predetermined distance within the openings. Because of a magnetic core, the segments are held against the surface of the drum by the mag-

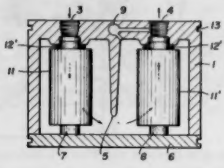
netic force of the drum and thereby squeeze the coolant from the swarf while at the same time riding over the top of piles of swarf accumulated in front of the segments to allow the piles to be carried past the segments for scraping from the drum.

3,804,257

FLUID FLOW FILTER UNIT WITH MAGNETIC AND/OR MECHANICAL FILTER MEANS

Heinrich Sommermeyer, Ronneburger Strasse 13, 65, Gera/Thuringia, Germany

Continuation of Ser. No. 81,942, Oct. 19, 1970, abandoned.
This application Aug. 7, 1972, Ser. No. 278,520
Int. Cl. B01d *29/00*
U.S. Cl. 210—335 2 Claims



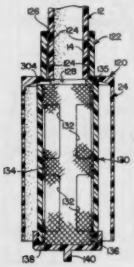
A dual filter with magnetic and/or mechanical filter members. The filter housing is generally rectangular in cross-section. The filters are removably and interchangeably mounted therein.

3,804,258

FILTERING DEVICE

Vincent F. Okuniewski, 5136 Gerald St., Warren, Mich., and Leonard B. Flowers, 753 E. Valley Chase, Bloomfield Hills, Mich.

Filed Aug. 8, 1972, Ser. No. 278,783
Int. Cl. B01d *29/10*
U.S. Cl. 210—460 23 Claims



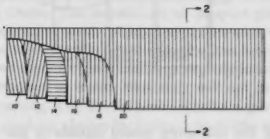
A liquid filtering device that is manually attachable to and removable from the distal end of the liquid discharge hose of a powered automatic washing machine, is provided. The filter device in combination embodies a coupling member, a filter housing having a removable filter screen therein and an outer liquid deflector about the filter housing.

3,804,259

FILAMENT WOUND REVERSE OSMOSIS TUBES

Billy M. Riggleman, Wilmington, and William L. Young, III, Newark, both of Del., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 23, 1973, Ser. No. 325,969
Int. Cl. B01d *31/00*
U.S. Cl. 210—490 13 Claims



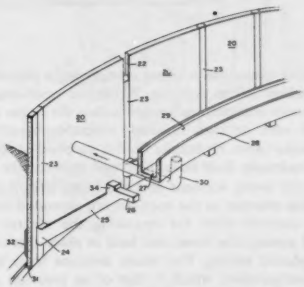
This invention relates to an improved resin-bonded filament wound support tube for membranes employed in reverse osmosis processes. The support tube is in the form of a cured composite structure and contains at least 20–30 percent by weight of a thermosetting resin. The tube has interior plies of helical filament windings which result in a smooth interior surface for the tube and high strength.

3,804,260

COMPOSITE SEWAGE TANK

Francis X. Crowley, Wellesley, Mass., assignor to Crowley Hession Engineers, Wakefield, Mass.

Filed Dec. 20, 1971, Ser. No. 209,724
Int. Cl. B01d *21/00*
U.S. Cl. 210—513 5 Claims



This invention comprises a settling tank of the type in which is incorporated a built-in settling trough or chamber. The invention also includes within its scope an improved process of building such tanks with precast panels in accordance with sound engineering practice and in a manner that is advantageous from the standpoint of expense and durability.

3,804,261

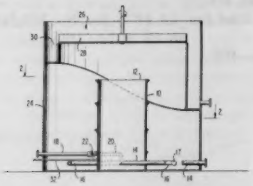
APPARATUS FOR GRAVITY SEPARATION OF IMMISCIBLE FLUIDS

James A. Whelan, Alexandria; James R. Henry, and Horace H. White, both of Pineville, all of La., assignors to Pineville Kraft Corporation, Pineville, La.

Filed Aug. 28, 1972, Ser. No. 284,002
Int. Cl. B01d *17/02*
U.S. Cl. 210—519 2 Claims

Tall oil soap is separated from black liquor used in the Kraft production process by uniformly introducing the mixed liquids into the bottom of a large outer container to flow upwardly

and having the heavier black liquor go through a zone of zero upward velocity and flow downward for discharge from the bottom of an inner baffle. This arrangement prevents short



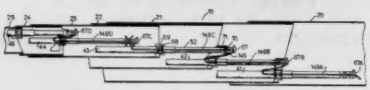
circuiting of the incoming mixed liquids to the black liquor outlet. The tall oil soap will accummulate at the top of the containing vessel where it is skimmed in a conventional manner.

3,804,262

TELESCOPIC BOOM

Daniel C. Wiencek, and James A. Jones, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, Milwaukee, Wis.

Filed Sept. 18, 1972, Ser. No. 289,986
Int. Cl. B66c *23/04*
U.S. Cl. 212—55 **10 Claims**



A mobile crane has a boom comprising a plurality of telescopic hollow boom sections. Hydraulic operating cylinders for the boom sections are housed within the boom and each is provided with its own remotely operable electrically controlled main valve. Hydraulic fluid is supplied to the valves by flexible hydraulic fluid hoses disposed between the side plates of adjacent boom sections and the hoses uncoil or coil in a frictionless manner as the sections are extended or retracted. Electric control wires for operating the electric wires are wrapped around the hoses and held in place thereon by heat-shrunk plastic tubing. The boom sections have a cross-sectional configuration which is that of an inverted A-frame or trapezoid to increase boom strength, to provide the maximum ratio between internal component space and weight, and to enable a more compact physical arrangement of the boom and boom hoist cylinders on the crane when the boom is in lowered position. The hydraulic cylinders are progressively smaller in size (proceeding from the base end of the boom to its remote end) to provide a balanced hydraulic system and pressure compensating valve means located between the source of fluid and the first (lowest) cylinder respond to pressure differentials thereat to dump or unload excess fluid as is required to maintain a predetermined pressure differential.

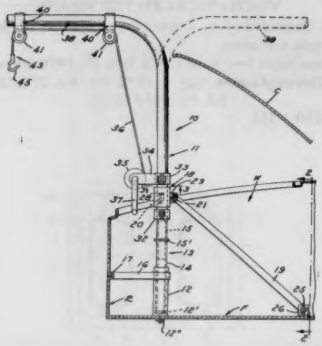
3,804,263

PORTABLE HOIST

Roger Castonguay, 3905 Blaconsfield, Detroit, Mich.

Filed Aug. 17, 1971, Ser. No. 172,516
Int. Cl. B66c *23/02*
U.S. Cl. 212—65 **6 Claims**

A davit-shaped hoist has its column part pivotally or rotatably mounted to swing on a vertical axis in a braced cylindrical socket removably bolted to the floor of an automobile's rear trunk space; and a coaxial sleeve-like swivel collar further braces the column in its manually controlled swinging movement about said axis. The collar is stably sustained in a position well above the socket by inclined struts pivotally connected to 90°-spaced ears on the collar, the lower ends of the struts being releasably secured, as by bolts taking into angle-iron parts on the trunk floor. A crank-operated winding drum fast on the hoist column has a load lifting cable secured thereto, the cable being trained upwardly and laterally about



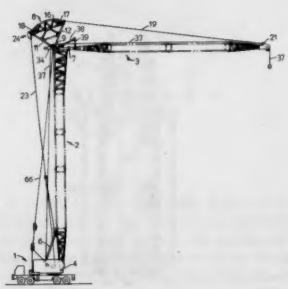
adjustable guide pulleys on a horizontal extension arm or beam of the column; and the cable, as anchored at the end of the column beam, supports a swivel-type pulley and hook unit between the anchor and the end-most guide pulley. An elongated sleeve extension unit may be interposed between the cylindrical socket and the lower end of the column part for the purpose of raising the extension arm or beam of the column part above the roof of the vehicle. Thus the hoist may be used, as an example, to load and/or unload the trunk and/or roof of a vehicle.

3,804,264

TOWER CRANE WITH ROCKABLE TOP SECTOR

Nils E. Hedeen, and George S. Allin, Jr., both of Mequon, Wis., assignors to Harnischfeger Corporation, Milwaukee, Wis.

Filed Dec. 8, 1972, Ser. No. 313,589
Int. Cl. B66c *23/62*
U.S. Cl. 212—144 **7 Claims**



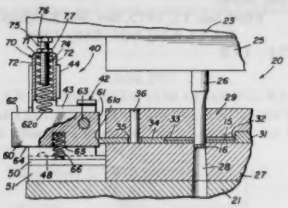
A tower crane is provided with a sector shaped rocker at the top of the tower boom and with a control cable which winds itself upon and unwinds itself from the arcuate periphery of the rocker during downward and upward swinging of the jib boom. A sharp change of angularity between the control cable and a connected hoist cable during raising and lowering of the

jib boom is taken care of by a link joint which seats itself on the rear corner of the rocker when the jib boom is lowered and which swings away from it when the jib boom is raised. An articulated stop linkage at the top of the lower boom prevents back swing of the jib boom beyond a selected limit position.

3,804,265
STOCK PUSHER

Steven Charnota, 4945 N. Normandy Ave., Chicago, Ill., and Arnold F. Wolf, 5511 Warren Ave., Morton Grove, Ill.

Filed Nov. 6, 1972, Ser. No. 303,825
Int. Cl. B26d *7/16*
U.S. Cl. 214—1.3 **5 Claims**

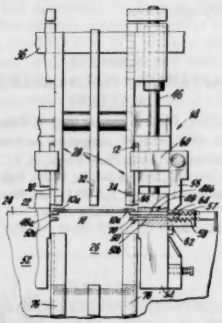


A stock pusher has a frame for operatively mounting on the bed of a punch press. A lever is pivotally mounted on the frame, there being a first region on the lever which operatively engages stock and pushes the same against a reaction surface. A second region on the lever is operatively engaged by the ram of the press to pivot the lever and cause the stock to be pushed against the reaction surface. The distances between the pivot point and the first and second regions are such as to provide a mechanical advantage with respect to pushing the stock. The stock pusher is of one-piece construction so as to be quickly and easily mounted on the press bed.

3,804,266
STRIP MATERIAL PACKING APPARATUS

Frederick F. Forthmann, Jr., 688 Pascack Rd., Washington Township, Berger County, N.J.

Filed June 1, 1972, Ser. No. 258,735
Int. Cl. B65g *57/06*
U.S. Cl. 214—6 DK **7 Claims**

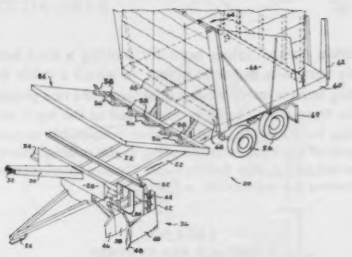


A device for packing individual lengths of strip material, particularly labels, comprises a support over which the strip materials are fed having a packing chute drop opening of a size large enough to receive the length of strip material. At least one first pair of support plates project from opposite sides of the opening into the opening by an amount to engage and support the individual lengths of strip material which are fed into alignment with the opening and at least one second pair of support plates are located below the first pair in a position to receive the strip material which is dropped by the first pair when they are opened. The labels fed over the opening are moved downwardly into the opening by a packing foot which also carries a cam for successively moving the first set of support plates out of alignment with the opening to drop the label onto the second set which are then moved out of the opening to permit the downward movement of the label into the packing chute. The second set of support plates include spaced engagement teeth which cooperate with the packing foot which moves into the opening so that the labels are wiped off the second support plate and downwardly into the packing chute in a manner to insure that they will not pop upwardly out of the opening. The device also includes a guide for a plurality of the packing chutes including a movable support plate which is movable backwardly and forwardly on the guide and carries a plurality of individual packing chutes which may be moved backwardly and forwardly with the support plate in order to align one of them with the drop opening. At least one of the individual packing chutes may be adjusted relatively to its support plate.

3,804,267
BALE WAGON

Albert C. Cook, Kingsburg, and Donald M. Grey, Selma, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 3, 1972, Ser. No. 240,472
Int. Cl. B65g *59/08*
U.S. Cl. 214—8.5 K **12 Claims**



A bale wagon, of the single bale unloading type, having a load carrying bed overlying a chassis structure and including an unloading table pivotally mounted adjacent one end of said load bed. The load bed is provided with a rolling rack adapted to move fore-and-aft towards said unloading table such that a tier at a time is pushed from said load bed onto said unloading table where the tier is unloaded from the bale wagon, one bale at a time. For powering the unloading table a hydraulic cylinder is provided and controlled by a control valve that is operative to station the unloading table at any one of an infinite number of unloading positions adjacent the end of the load bed, thereby allowing the unloading table to be adjustably positioned relative to the particular ground elevation on which the bale wagon is disposed.

Also, during the single bale unloading operation, a metering device is employed in conjunction with the unloading cylinder and is controlled during the single bale unloading operation to raise the unloading table from its particular selected unloading position to a tier receiving position closely adjacent the end of the stack disposed on the load bed, such that the tier being pushed from the load bed onto the unloading table falls only a relatively short distance uncontrolled, thereby avoiding the

situation where the bales tend to spill out from the tier in those cases where the tier has to fall from the load bed all the way down to where the unloading table assumes the unloading position.

3,804,268

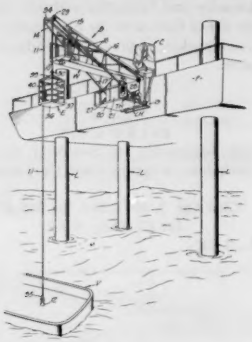
MARINE PLATFORM STRUCTURE

Charles D. Barron, Huntington Beach; Earl A. Peterson, Long Beach; Gary K. Stark, Buena Park, and Carl A. Wilms, La Habra, all of Calif., assignors to Jackson, Byron Inc., Long Beach, Calif.

Division of Ser. No. 19,582, March 16, 1970, Pat. No. 3,675,900. This application July 8, 1971, Ser. No. 160,641. The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.

Int. Cl. B65g *67/58*

U.S. Cl. 214—14 **4 Claims**



A motion compensating hoist for moving a load between relatively vertically movable points, in which a cable from a tensioning hoist is interconnected between the two points, and the cable from a load hoist is connected to the load, and the tensioning hoist and the load hoist are cooperable to establish movement of the load corresponding to the relative movement between the two points and to cause further movement of the load between the two points.

3,804,269

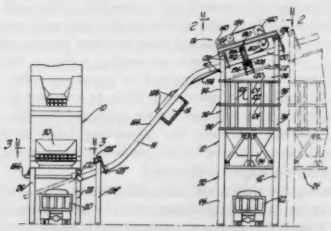
STORAGE BIN SYSTEM

William Robert Varnum, Pleasant Ridge, Mich., assignor to J & J Burning, Inc., Warren, Mich.

Filed Dec. 10, 1971, Ser. No. 206,699

Int. Cl. B65g *65/30*

U.S. Cl. 214—16 R **7 Claims**



A storage bin system, particularly suited for use with hot asphalt producing mills, and comprising modular units prefabricated for on-site erection which include a base structure, discharge chute, bin units, a charging enclosure, and track supporting section each having individual corner posts with mounting pads for being structurally fastened together. And, an operating mechanism mounted on top of the storage bins for moving a carrier car with clam-shell doors over an inclined trackway and into a discharge position relative to bin and carrier door operating devices interconnected for synchronous operations.

3,804,270

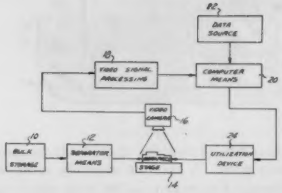
BULK STORAGE AND AUTOMATIC PRESENTER SYSTEM WITH IMAGE PRODUCING MEANS

Jimmie A. Michaud, Bellbrook, and Jack R. Stroman, Kettering, both of Ohio, assignors to The Bendix Company, Southfield, Mich.

Filed Jan. 12, 1973, Ser. No. 323,005

Int. Cl. B25j *3/00*; B65g *1/04*

U.S. Cl. 214—16 B **5 Claims**



A system is disclosed for presenting parts or workpieces from a bulk storage location to a presenter staging location singly and in a determined position, this system including a separator mechanism for removing workpieces singly from one or more bulk storage locations and transferring the same to be deposited at a presenter staging location, the separator transfer mechanism being combined with a video system which develops an image of the workpiece and staging location and generates corresponding video data which is processed to identify the workpiece and determine its position including its location and orientation with respect to the staging location. This information is used to generate a control signal which is transmitted to the control system of a utilization device, disclosed as a programmable assembly arm, so that the utilization device's mode of manipulating the workpiece corresponds to the position of the deposited workpiece as determined from the video data. This system thus provides a general purpose automatic presenter system suitable for automatic assembly operations.

3,804,271

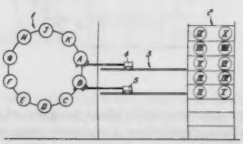
LOADING APPARATUS FOR A CABLE STRANDING MACHINE

Ronald Yaxley Gill, Illford Essex, and William George Cook, London, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 26,383, April 7, 1970, Pat. No. 3,618,799. This application Aug. 2, 1971, Ser. No. 168,476

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 R **5 Claims**



A loading apparatus is mechanized to load conductor bobbins onto a cable stranding machine. The apparatus includes a

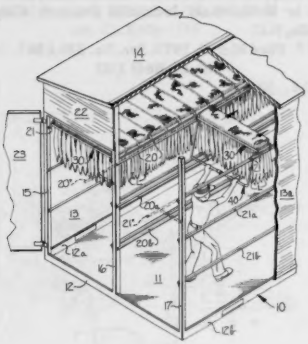
wheeled base, an axle rigidly attached to the base, a platform rotatably mounted about said axle, a retractable hydraulic arm, one end of which is pivotally mounted on the platform, an actuating means for the hydraulic arm and means for rotating the platform. The actuating means includes a guide rigidly mounted on the platform and a linkage coupled to the guide for imparting lifting, lowering, extending and retracting motions to the arm. The apparatus is supplied with a scoop at a periphery of the platform and a holding bar at the end of the arm to lift up a bobbin while the holding bar presses the bobbin against the scoop. The apparatus may be adpated to load two or more bobbins simultaneously. Full bobbins are located in a storage rack running parallel with a carriage in the stranding machine and the loading apparatus is positioned between the rack and the carriage to automatically unload empty bobbins from the carriage and replace them with full bobbins from the rack.

3,804,272

METHOD AND APPARATUS FOR LOADING RACKS OF TOBACCO LEAVES IN CURING ENCLOSURES

Frank Leigh Horne, Charlotte, N.C., assignor to Gas-Fired Products, Inc., Charlotte, N.C.

Filed Mar. 1, 1973, Ser. No. 337,116
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 R **8 Claims**



A method of and apparatus for forming tiers of successive racks of suspended tobacco leaves on pairs of spaced, substantially horizontal, elevated rails in a tobacco curing enclosure, wherein a wheeled carriage is positioned with its wheels resting upon corresponding ingress end portions of a pair of the rails and each successive rack of suspended tobacco leaves is lowered onto the carriage, one at a time, with the leaves depending from the rack between the rails. The carriage then is wheeled forwardly along and toward the other ends of the rails, and then the rack is removed from the carriage and deposited on the rails by tilting the rear of the carriage upwardly to cause the rack to slide off the carriage while it is being moved rearwardly from beneath the rack.

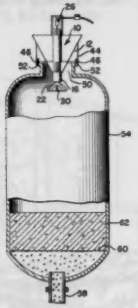
3,804,273

CATALYST DISTRIBUTION APPARATUS

George A. Uhl, Markham, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,535
Int. Cl. B65g *65/30*
U.S. Cl. 214—17 CB **9 Claims**

Apparatus for distributing particulate material over a zone. A supply hopper for the particulate material has adjacent its outlet a conical distributor element which is coupled to a variable speed motor. The conical distributor element has on its sloped surface a plurality of fins and preferably a plurality of slots. Some particulate from the supply hopper passes through the slots, if present, to the area of the distribution zone beneath the distributor element. Some particulate material



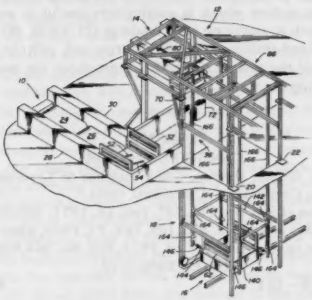
strikes the conical surface and is deflected radially therefrom. Some of the particulate material is struck by the fins as the distributor element rotates and is deflected tangentially. The apparatus is particularly suited for charging a catalytic reactor with catalyst.

3,804,274

ARTICLE HANDLING TRANSFER MECHANISM

Ivan E. Johnson, Richardson, Tex., assignor to Docutel Corporation, Dallas, Tex.

Filed Feb. 16, 1972, Ser. No. 226,909
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 CA **20 Claims**

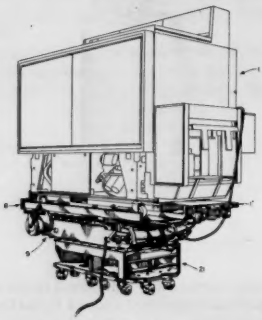


Luggage and articles of similar configuration are transported from a check-in station to a remote distribution station in a track mounted self-propelled and self-guided vehicle. The vehicle chassis supports a permanently affixed half-wall body. A removable insert mates with the half-wall body to form a container for the luggage or articles of simlar configuration being transported. To load articles into the car insert, the insert is raised from the tracked vehicle to an elevated transfer position at a check-in station. The check-in station includes a shuttle car arrangement for transferring articles from a drop-off point to the transfer position. This shuttle car moves from the drop-off point to the transfer position where a pusher mechanism transfers the articles into the elevated car insert. After loading the insert at the elevated position, it is lowered into the tracked vehicle for dispatching to a remote distribution station. At the remote distribution station, a similar raising mechanism lifts the car insert from the tracked vehicle and the articles are unloaded.

3,804,275
STAIR CLIMBER MOVING METHOD

William S. Lee, c/o Lee Moving and Storage, 13100 Cavere Ct., New Orleans, La.

Continuation-in-part of Ser. No. 9,223, Feb. 6, 1970, Pat. No. 3,633,774. This application Jan. 10, 1972, Ser. No. 216,597
Int. Cl. B65g 67/02
U.S. Cl. 214—152 5 Claims



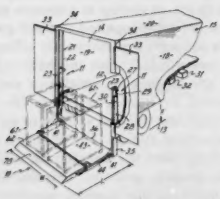
A stair climber moving system (FIGS. 1–2) for moving a load up flights of stairs (FIGS. 9A–9H) which includes a basic tractor unit, a load mounting platform attached to the tractor which allows the load to be shifted longitudinally with respect to the tractor during use (FIGS. 5A, 5B, 9F), an integrated winch system for changing the position of the load with respect to the tractor unit (FIGS. 7–7A), and a collapsible dolly (FIGS. 6A–6D) permitting changes from horizontal (6B) and inclined (6D) positions.

Having the dolly change from an inclined to a horizontal disposition minimizes the total horizontal, longitudinal dimension of the system which is particularly useful in very tight quarters such as occur on stair landings (cf. FIGS. 9G & 9H). Having a load-shifting capability during use permits precise balancing of the system as needed throughout the movement of the load up the stairs.

3,804,276
CARGO PLATFORM

William H. Himes, Dayton, Ohio, assignor to Leyman Manufacturing Corporation, Cincinnati, Ohio

Division of Ser. No. 115,837, Feb. 16, 1971, which is a continuation of Ser. No. 872,108, Oct. 27, 1969, abandoned. This application May 29, 1973, Ser. No. 364,959
Int. Cl. B60p 1/44
U.S. Cl. 214—152 4 Claims

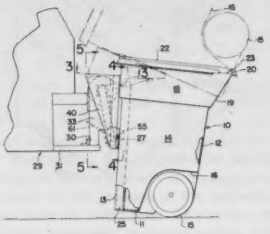


A cargo platform of the type mounted on the rear of trailer trucks that is particularly adapted for use with a combined elevating and storing mechanism for such platforms. The cargo platform includes, in the preferred embodiment, a first section of the platform mounted along the front edge thereof to the combined elevating and storing mechanism by a first pivotal joint, a second section of the cargo platform mounted to the first section adjacent the rear edge of the first section by a second pivotal joint, supports associated with the two sections for holding the sections in platform configuration when desired, locks associated with the two sections for holding the two sections in sandwich configuration when desired, the sections being pivotable between platform configuration and sandwich configuration by means of the second pivotal joint, and at least one wheel fixed to one of the sections adjacent that edge where the sections are pivotally joined, the wheel providing a rolling surface that maintains contact with the ground as the platform, when in sandwich configuration, is lifted at the first pivotal joint from a horizontal attitude whereat it rests on the ground and extends outwardly of the first pivotal joint to a vertical attitude whereat it hangs in the same plane as the vertical plane incorporating that first pivotal joint.

3,804,277
WASTE RECEPTACLE AND DUMPING MECHANISM THEREFOR

Thomas E. Brown, Statesville; Richard M. Brotherton, Mooresville, and Howard J. Shive, Statesville, all of N.C., assignors to Rubbermaid Industrial Products Corporation, Statesville, N.C.

Filed Mar. 9, 1973, Ser. No. 339,636
Int. Cl. B65f 3/02
U.S. Cl. 214—302 8 Claims



Dumping mechanism comprising a normally vertical face plate mounted on a pick-up vehicle for upward rotation and having an upper saddle for engaging a downwardly directed recess in a portable waste receptacle, to invert the receptacle as the face plate rotates, and a lower hook which automatically moves into engagement with a cross bar on the receptacle as the face plate rotates to hold the receptacle in inverted position.

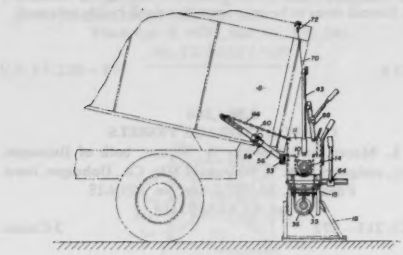
3,804,278
TAILGATE CONVEYOR

William T. James, III, Canfield, Ohio, assignor to The Renner Company, Youngstown, Ohio

Filed Sept. 15, 1972, Ser. No. 289,631
Int. Cl. B60p 1/04
U.S. Cl. 214—509 5 Claims

A tailgate conveyor for asphalt handling trucks and the like positions a main screw-type conveyor transversely of the tailgate of the truck for reception of material therefrom and pro-

vides a movable extension conveyor for operation on either end of the main conveyor so that material received in the main



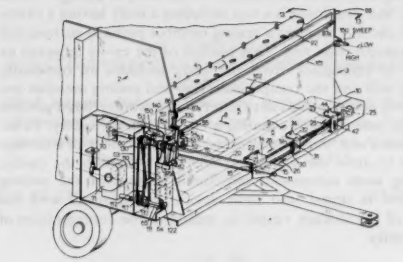
conveyor from the truck may be moved to either end thereof and into the movable extension conveyor and delivered to any desired positioned outwardly therefrom.

3,804,279

DRIVE MECHANISM FOR FORAGE WAGON

Benjamin A. Braunberger, and Donald E. Burrough, both of West Bend, Wis., assignors to Gehl Company, West Bend, Wis.

Filed Sept. 15, 1972, Ser. No. 289,762
Int. Cl. B60p *1/38*
U.S. Cl. 214—519 **8 Claims**



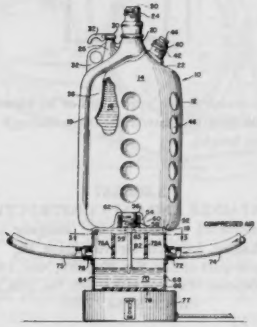
A self-unloading forage wagon has a beater, a main conveyor and a discharge or cross conveyor which are driven from a power input shaft (connected to the power take-off shaft of a tractor) to forceably discharge material from the wagon. The discharge conveyor is driven by a first drive chain arranged in the form of a figure eight to effect direction reversal between the tractor power take-off and the discharge conveyor. The beater and main conveyor are driven by a second drive chain connected between the power input shaft and a safety clutch mechanism. The speed selector mechanism comprises a beater drive shaft which runs at constant speed and a main conveyor drive shaft which can run at any of three speeds (low, sweep or high). Three separate power transmitting means, each comprising flexible endless chain and sprockets, are interconnected between the beater drive shaft and the main conveyor drive shaft and are operable by means of a three-speed selector clutch having low speed, sweep speed and high speed positions. With the speed-selector clutch in low speed position, one power transmitting means comprising an overrunning clutch, drives the main conveyor drive shaft and the main conveyor at low speed. With the speed-selector clutch in either sweep speed or high speed position, the overrunning clutch in the aforesaid one power transmitting means automatically disengages, and the main conveyor is driven at either sweep speed or high speed by either of the other two power transmitting means, whichever is selected, while the beater is still driven at constant speed.

3,804,280

MULTI-USE INHALATION THERAPY APPARATUS

Edward van Ameringen, Wilmette; Glenn Lee Beall, Gurnee; John Charles Clark, Zion, and Richard Joseph Reilly, Deerfield, all of Ill., assignors to Respiratory Care, Inc., Arlington Heights, Ill.

Filed July 27, 1971, Ser. No. 166,417
Int. Cl. B65d *23/00*
U.S. Cl. 215—1 C **4 Claims**



A disposable sealed container as it is formed is aseptically filled with a fluid for inhalation therapy. A first duct fashioned integrally with the container has an integral breachable seal to provide an opening for passing a gas such as oxygen under pressure through the water when the container comprises a humidifier reservoir for operating in a first mode and for removing water when the container comprises a nebulizer reservoir for operating in a second mode. A second duct fashioned integrally with the container has an integral breachable seal to provide an opening through which wetted oxygen is forced outwardly when the container operates in its first mode and through which atmospheric air is drawn when the container operates in one manner of a second mode. A third duct fashioned in a recess in the bottom of the container having an integral breachable seal to provide an opening for dispensing the fluid therefrom into a cup-like device from which oxygen carrying particles of fluid is dispensed while the fluid in said cup-like device is subjected to ultrasonic vibrations and oxygen is admitted under pressure into said cup-like device. A breaching tool is provided which both acts to penetrate the seal and to permit the fluid in the container to be admitted into the cup-like device in a manner to maintain a selected level. As no other holes are present in the container under this mode of operation the tool has provision for admitting a quantity of atmospheric air as it is needed to displace the fluid entering the cup-like device. The said device is useful as a holder for the container. Means is also provided for using the container as a water bottle from which the fluid may be poured.

3,804,281

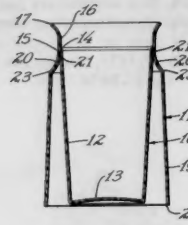
BEVERAGE CRUET

Thomas H. Eckdahl, Minneapolis, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed June 21, 1971, Ser. No. 155,025
Int. Cl. A47j *41/00*
U.S. Cl. 215—13 R **2 Claims**

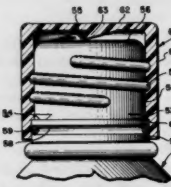
A cruet is formed of a receptacle and an outer supporting sleeve. The receptacle tapers downwardly and inwardly so as to be of smallest diameter at its lower end. The sleeve tapers

inwardly and upwardly to engage the receptacle at its upper extremity. The spacing between the receptacle and sleeve is



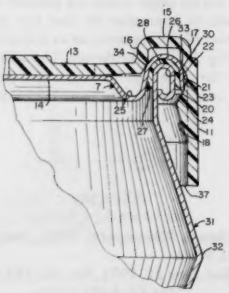
such as to accomodate the upper end of an identical cruet so that the cruets may be nested together through the greatest portion of their height.

3,804,282
CONTAINER AND CAP CONSTRUCTION
Henry Komendowski, Evanston, Ill., assignor to Automatic Liquid Packaging, Inc., Elk Grove Village, Ill.
Continuation-in-part of Ser. No. 200,489, Nov. 19, 1971. This application May 24, 1972, Ser. No. 256,356
Int. Cl. B65d *17/02*
U.S. Cl. 215—32 **9 Claims**



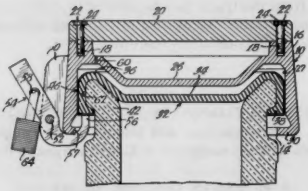
A plastic container with an integral cover has a cap screw threaded to the cover. Manipulation of the cap causes the cover to be severed from the container body.

3,804,283
COMPOSITE CLOSURE CAP
Henry E. Frankenberg, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 7, 1972, Ser. No. 278,187
Int. Cl. B65g *67/02*
U.S. Cl. 215—262 **6 Claims**



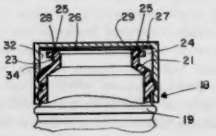
A composite closure cap comprising a plastic fitment or overcap retaining a gasketed closure lid and adapted for high speed machine press-on application and convenient pull-off removal with respect to a container the top opening of which provides an annular top seal finish. A tamper-proof lift ring or tab is integrally hinged to the fitment and frangibly connected to the fitment so as to be non-operative until visibly released.

3,804,284
CAP FOR STORAGE VESSELS
Cecil L. Moore, and Timothy A. Neyens, both of Dubuque, Iowa, assignors to A. Y. McDonald Mfg. Co., Dubuque, Iowa
Filed Mar. 30, 1972, Ser. No. 239,625
Int. Cl. B65d *51/18*
U.S. Cl. 215—272 **3 Claims**



A cap adapted to be received on the neck of storage vessels or the like. Disclosed is a cap including a body having a cavity which slidably receives a sealing member partially surrounded by a compression ring. That portion of the cavity adjacent its point of emergence from the body includes an outwardly flared wall and the compression ring and sealing member are similarly configured so as to enter the outwardly flared portion for one position of the sealing member with the cavity. To effectuate a seal, the body is forced toward the neck of a storage vessel to drive the sealing member inwardly into the cavity. During such movement, the flared portion of the sealing member is urged into tight sealing engagement with the neck of the storage vessel by reason of the configuration of the cavity.

3,804,285
BOTTLE WITH POUROUT NECK
John N. Kraas, and Paul O. Minott, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed May 23, 1972, Ser. No. 256,059
Int. Cl. B65d *41/04*
U.S. Cl. 215—40 **5 Claims**



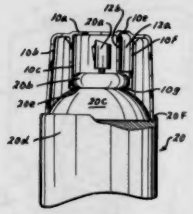
A bottle of unitary construction is provided having a pourout neck which is virtually drip proof and which in addition has an improved means for sealing with a threaded cap.

3,804,286

CLOSURE

John H. Watson, Evansville; Sidney P. Nelson, Griffin, and Thomas E. Sawyer, Newburg, all of Ind., assignors to Imperial Plastics, Inc., Evansville, Ind.

Filed Apr. 8, 1971, Ser. No. 132,395
Int. Cl. B65d 17/00
U.S. Cl. 220—27 4 Claims



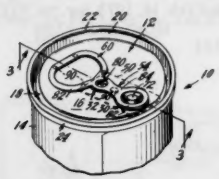
A closure for a container characterized by a top entry for a prying tool which fractures a portion of the closure for the removal thereof from the container and which provides a tamper-proof arrangement for customer assurance.

3,804,287

END CLOSURE FOR AN EASY OPENING RESEALABLE CONTAINER

Alfred Edward Balocca, Wheaton; Richard Joseph Brincks, Wheeling, and James Edwin Scott, Jr., Des Plaines, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed July 10, 1972, Ser. No. 270,325
Int. Cl. B65d 17/00
U.S. Cl. 220—27 17 Claims



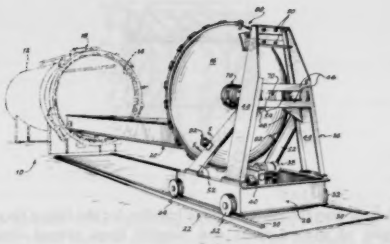
An end closure for an easy opening resealable container, the end having a dispensing aperture initially sealed by an internal sealing layer adhered to the inner surface of the end around the aperture and a plug type resealing member extending through said aperture and bonded to said sealing layer. The plug type resealing member is provided with a lower portion which is smaller than the dispensing aperture and extends therethrough, the bottom wall thereof being bonded to the sealing layer. The upper portion of the resealing member is larger than the dispensing aperture and is provided with a depending straight wall which fits into the aperture with interference between the peripheral wall of the aperture and the depending straight wall of the resealing member to thereby releasably seal the easy opening container subsequent to the tearing of the sealing layer.

3,804,288

PRESSURE VESSEL

Henry J. Piegza, Clarence, N.Y., assignor to WSF Industries, Inc., Tonawanda, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,048
Int. Cl. B65d 87/06; F16j 15/50
U.S. Cl. 220—46 R 6 Claims



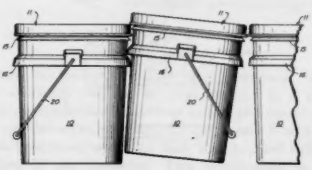
The door of a horizontally disposed pressure vessel is adjustably supported by a track mounted trolley for reciprocation between door closed and opened positions. The door is provided with apertures for freely receiving trolley mounted pins, which are employed to support an outer end of a material supporting carriage movable from within the pressure vessel as the door is moved towards its opened position. The apertures are sealed by flexible metal bellows. Independent movements of the carriage and door relative to the trolley permit the door to be properly seated in a closed condition under varying carriage loading and/or pressure vessel thermal distortion conditions.

3,804,289

CONTAINER AND CLOSURE

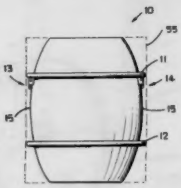
Roy G. Churan, Oak Lawn, Ill., assignor to Vulcan Plastics Inc., Addison, Ill.

Filed Mar. 17, 1972, Ser. No. 235,753
Int. Cl. B65d 43/10, 7/44, 21/04
U.S. Cl. 220—60 R 2 Claims



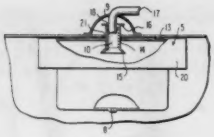
This invention relates to a molded plastic open-end container and a cover which is affixed to the container so as to effect a sealed-tight closure on the container. The cover has an annular inverted U-shaped channel into which the upper edge of the container is received, with appropriate interlocking means being provided on the container and cover to secure the cover to the container. The cover has an annular outer wall which extends a pre-determined length below the upper edge of the container, and the latter has an annular bumper rib and an annular drip rib about its side wall. These ribs are spaced from the lower edge of the cover's annular outer wall and are proportioned to cooperate with one another to retain the container in spaced relationship to another container, to protect against the cover being inadvertently dislodged by another container engaging beneath the lower edge of the cover's annular outer wall and forcing the cover to pop off of the container.

3,804,290
LIFTING HANDLES FOR BEER BARREL
Luke N. Billman, R.R. 1, Box 410, Monrovia, Ind.
Filed Dec. 26, 1972, Ser. No. 318,222
Int. Cl. A47b *95/02*
U.S. Cl. 220—72 **9 Claims**



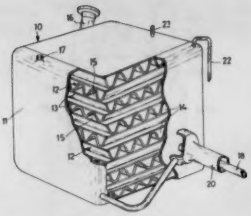
A beer barrel having a pair of handles for the lifting thereof. A pair of spaced apart and parallel rings extend circumferentially around a circular beer barrel main body spacing the main body apart from a supporting surface as the barrel is rolled on its side. A pair of handles are pivotally mounted to the main body adjacent one of the rings. The handles in a retracted position are located between the main body and the outer periphery of the rings. The handles are pivotable to a horizontal lifting position with stops provided preventing further upward travel of the handles. Spring means mounted to the handles return the handles to the retracted position when released.

3,804,291
FUEL TANK FOR VEHICLES
Ludwig Fricker, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Sept. 8, 1972, Ser. No. 287,454
Claims priority, application Germany, Sept. 10, 1971, 2145242
Int. Cl. B65d *25/00, 1/24*
U.S. Cl. 220—85 R **35 Claims**



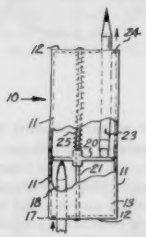
A fuel tank for vehicles, especially for passenger motor vehicles, in which a container is provided on the inside of the tank within the highest area thereof and located at least partially above the maximum filling height; the container is closed except for at least one opening of small cross section located at its bottom side and is provided with a connection extending additionally to the tank by way of a dome mounted on the tank; the portion of the connection leading from the dome to the container is constituted by a channel with a channel opening on the side of the dome disposed near the apex of the dome; a vent and pressure-release line for the tank system which projects out of the dome in the upward direction protrudes into the channel under formation of an annular gap of relatively small cross section which permits the ready passage therethrough of gas but which permits the passage therethrough of fuel only in small droplets.

3,804,292
FIRE-PREVENTING FUEL TANK FOR MOTOR VEHICLES AND/OR BOATS
Carlo Chiti, Via E. Fermi, 7, Settimo Milanese, Italy
Filed June 15, 1971, Ser. No. 153,287
Claims priority, application Italy, Aug. 6, 1970, 28374/70; Feb. 17, 1971, 20695/71
Int. Cl. B01d *19/00;* **B65d** *25/04*
U.S. Cl. 220—88 B **6 Claims**



A fire-preventing fuel tank for motor vehicles and motor boats is disclosed, in which adjacent but separate volumes are provided in the tank, one kind of volumes holding the fuel, whereas the other holds a substance (e.g. a halogen), which, when admixed to the fuel, makes it non flammable. In the case of an accident, the shock ruptures the partition walls between the chambers holding the fuel and those holding the other fluid, so that fire is prevented. A number of different embodiments are described, but all of them realize the concept outlined above.

3,804,293
PENCIL BOX
Harry M. Redman, 4850 Jay St. N.E., Washington, D.C.
Filed Feb. 16, 1973, Ser. No. 333,396
Int. Cl. B43k *27/00*
U.S. Cl. 221—102 **4 Claims**



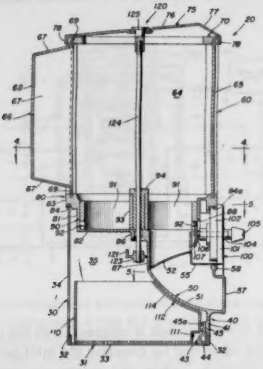
A pencil box for holding sharpened and dull pencils. This device consist primarily of a container with a slideable cover, having a spring loaded rod with arm means and lip means for simultaneously urging a sharp pencil out of one end of the box with the aid of pressure from a dull pencil being entered into the opposite end of the box.

3,804,294

BULK MERCHANDISE VENDING MACHINE WITH REMOVABLE CASH BOX AND SINGLE LOCK

Roy M. Householder, Morris, Ill., assignor to The Northwestern Corporation, Morris, Ill.

Filed Apr. 6, 1973, Ser. No. 348,523
Int. Cl. G07f 11/44
U.S. Cl. 221—154 5 Claims



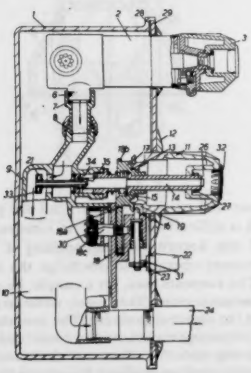
The machine comprises a housing which is provided with a cover and which contains a removable cash box. A merchandise storage member is supported by the housing and is arranged to latch the cover closed. Locking structure locks the lid in place and also prevents removal of the storage member. Unlocking the locking structure enables removal of the lid to gain access to the storage member and/or enables the storage member to be shifted to unlatch the cover and thereby gain access to the cash box.

3,804,295

DISCHARGE QUANTITY CONTROL DEVICE

Jurgen Humpert, Hemer, and Friedrich Wilhelm Bielecke, Bergneustadt, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 346,030
Int. Cl. G01f 1/06
U.S. Cl. 222—20 1 Claim



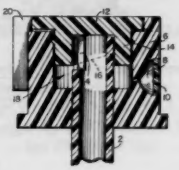
A mixing faucet feeds a fluid motor through a valve. The valve is closed in response to rotation of the fluid motor output shaft through a predetermined angle.

3,804,296

ADJUSTABLE AEROSOL VALVE BUTTON ASSEMBLY

Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 27, 1972, Ser. No. 247,979
Int. Cl. B67d 5/22
U.S. Cl. 222—48 6 Claims



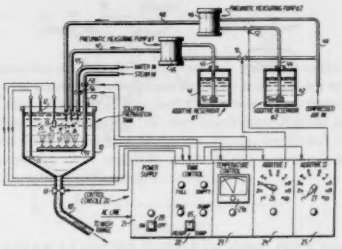
An aerosol valve operating button assembly including the tubular valve stem of an aerosol valve. The assembly is provided with means for varying the discharge of spray therefrom.

3,804,297

LIQUID CHEMICAL MIXING AND DELIVERY SYSTEM

Ojars Jurjans, Camden, N.J., assignor to Jetronic Industries, Inc., Philadelphia, Pa.

Filed June 8, 1973, Ser. No. 368,312
Int. Cl. B67d 5/08
U.S. Cl. 222—54 10 Claims



A system for automatic and semi-automatic mixing of chemical solutions and the delivery thereof to a utilization system. A solution vehicle, such as water, and liquid chemical additives are delivered to a solution preparation tank. Sensors in the tank determine when the tank is empty and full, and the temperature of the contents. This information is used to operate an automatic tank control system which controls the delivery of ingredients and of heat to the tank, and the emptying of the tank contents. Alternatively, the emptying function may be controlled manually. By the use of a plurality of solution preparation tanks and respective control systems, together with a sequencing control system, continuous output flow of mixed solution may be obtained.

3,804,298

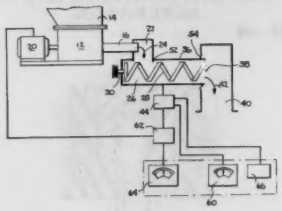
GRAVIMETRIC FEEDER

Ronald J. Ricciardi, 193 McArthur Ave., Garfield, N.J.

Filed July 25, 1972, Ser. No. 274,848
Int. Cl. B67d 5/08
U.S. Cl. 222—56 3 Claims

Apparatus for feeding particulate solid material having a main frame, an enclosed volumetric prefeeder mounted on the main frame, a motor for driving the prefeeder, the prefeeder having an enclosed dispensing outlet, a downspout connected

to the dispensing outlet in fixedly sealed relationship, an enclosed auger type conveyor, a sealing member for flexibly connecting in sealed relationship the downspout to the conveyor,



a driving member for driving the auger in the conveyor, a connecting member for flexibly connecting the conveyor in sealed relationship to the discharge conduit.

3,804,299

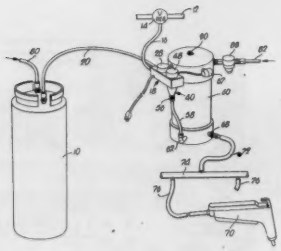
AUTOMATIC SHAMPOO MIXING AND DISPENSING SYSTEM

Philip Kain, 9649 Chadwick, Leawood, Kans.

Filed Jan. 8, 1973, Ser. No. 321,816

Int. Cl. A45d *19/00*

U.S. Cl. 222—61 **2 Claims**



A shampoo mixing and dispensing system having a number of individual shampoo application stations utilizes a single, central mixing and control device for shampoo concentrate and water drawn from respective individual sources, thus distributing solution of uniform concentration to all application stations. A pressurized holding tank downstream from the central mixing and control device assures that sufficient solution is always available for all of the stations, and mixing of the concentrate and water is enhanced by means of enveloping a stream of concentrate with a surrounding stream of water as the two are merged into solution. The tank is equipped with a pressure sensor operably coupled with a pair of valves disposed in the mixing device for controlling the flow of water and concentrate such that when a pressure drop occurs because of solution being dispensed at one or all of the stations, additional solution will be introduced into the tank.

3,804,300

BATCH ADMIXTURE METERING CONTROL

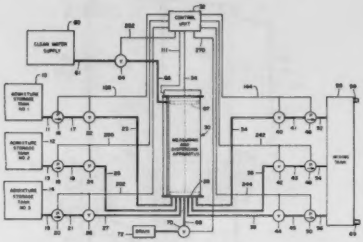
Edgar R. Cox, Smithfield, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Sept. 11, 1972, Ser. No. 287,865

Int. Cl. B67d *5/08*

U.S. Cl. 222—67 **13 Claims**

Disclosed is an apparatus for selectively measuring liquids from a plurality of sources and dispensing the liquids into a mixing tank. The apparatus has a plurality of storage tanks for holding various types of liquids. These storage tanks are independently connected through suitable conduits, valves and pumps to a measuring chamber. A float is positioned in the chamber and is connected by a chain to a rotatable disk, to rotate the disk as the position of the float varies within the chamber due to the addition of liquids therein. The disk is provided with a plurality of radially spaced natural magnets which periodically close a mercury switch to generate electrical pulses as the volume of liquid in the chamber increases. A pulse



counter and control circuit is connected to the reed switch to close the inlet valve and de-energize the inlet pump. A plurality of outlet conduits, valves and pumps are connected to the chamber to convey the fluids from the chamber to a mixing tank. The operation of these outlet valves and pumps is controlled by the control circuit to discharge the liquid from the chamber when the desired volume is present. A wash water, inlet valve is also connected to the chamber to rinse the interior of the chamber between successive dispensing cycles. A drain and drain valve are provided to remove the rinse water from the chamber.

3,804,301

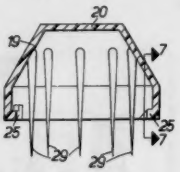
CLOSURES FOR CONTAINERS

Eugene Joseph Treanor, Burnham-on-Sec, England, assignor to Makap Limited, London, England

Filed Aug. 7, 1972, Ser. No. 278,378

Int. Cl. B67d *5/32*

U.S. Cl. 222—153 **1 Claim**



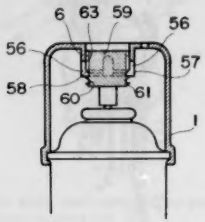
A dispenser and cover of known kind are provided with a cover which is difficult for children to remove. The dispenser may be of the known kind comprising a container and dispensing means operable to discharge the contents of the container. The contents may, for example, be pressurised and discharged as an aerosol. The cover, when in place, prevents operation of the dispensing means. The invention provides interengaging retaining means on the cover and the dispenser, one being a lug and the other a socket, and also provides resilient means, such as resilient fingers on the cover, which urges the lug into the socket. To remove the cover it must be pressed against the action of the resilient means to remove the lug from the socket, and rotated while the pressure is maintained, an action which children find difficult.

3,804,302

AEROSOL CONTAINER CAP DEVICE

Keizo Yamada, Urawa, and Katsumi Sone, Warabi, both of Japan, assignors to Kamaya Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1972, Ser. No. 238,512
Claims priority, application Japan, Mar. 31, 1971, 46-23336[U]
Int. Cl. B65d 83/14
U.S. Cl. 222—182 6 Claims



This invention relates to an aerosol container cap device.

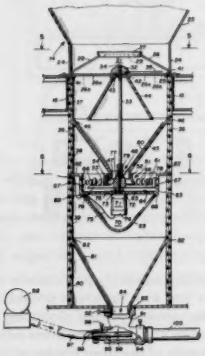
Said device comprises a cap for providing cover to an ejection valve assembly mounted in an aerosol container, a presser member movably mounted in the cap and adapted to be moved downwardly for causing a force to be exerted on said ejection valve assembly to bring said ejection valve assembly to an open position, and means for holding said presser member in its lower position to keep the ejection valve assembly in its open position.

3,804,303

SYSTEM FOR METERING PARTICULATE MATERIAL

Arthur L. Fassauer, P.O. Box 615, Canyon, Tex.

Continuation-in-part of Ser. No. 121,254, March 5, 1971. This application Sept. 20, 1972, Ser. No. 290,648
Int. Cl. B67d 5/54
U.S. Cl. 222—193 40 Claims



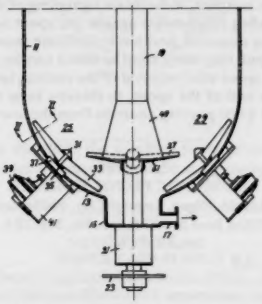
A mass of particulate material stored in a hopper is bottom unloaded and passed through several stages of aeration and fluidization to condition the material and place it in a relatively uncompacted state. The material is conditioned with a minimum of vibration of the material mass so that the mass remains a homogenous mixture of densities and does not stratify into powdery and coarse materials. The conditioned material is fed to a distributor ring wherein it is further aerated and fluidized into an uncompacted state and moved in a uniform volumetric flow through an annular array of holes into a pneumatic conveyor. Becasue the material is placed in an uncompacted state while being maintained a homogenous mixture of densities, a very precise mass of material may be metered out as a linear function of the time of delivery. With the present system, preselected masses of material can be delivered with extremely high accuracy.

3,804,304

DEVICE FOR DISCHARGING CELLULOSIC PULP OUT OF A CONTAINER

Johan C. F. C. Richter, St. Jean Cap Ferrat, France, assignor to Kamyr Aktiebolag, Karlstad, Sweden

Continuation of Ser. No. 20,759, March 18, 1970, abandoned. This application Apr. 18, 1972, Ser. No. 245,167
Int. Cl. B01f 15/02
U.S. Cl. 222—271 1 Claim



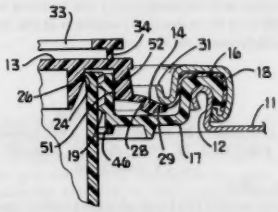
A device for discharging pulp through a centre outlet at the bottom of a container comprises three or more rotary scrapers located eccentrically of the outlet and being distributed over the half-spherical bottom of the container. Radial scraper arms attached to inclined shafts are swung forth and back in order to sweep over separate areas of the container bottom and advance the pulp towards the outlet.

3,804,305

CONTAINER CLOSURE WITH LOCKING PULL SPOUT, AND INTEGRAL SPOUT CAP, PULL RING, AND OUTER SEAL

Glenn T. Rieke, Auburn, Ind., assignor to Rieke Corporation, Auburn, Ind.

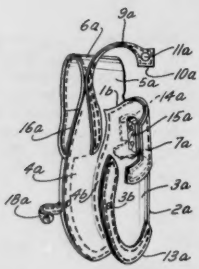
Filed Aug. 1, 1973, Ser. No. 384,751
Int. Cl. B65d 53/04
U.S. Cl. 222—538 13 Claims



A container having a flanged opening therein, receives on the container flange at this opening, a closure combination including: a spout guide and support directly received on the flange and having a central aperture with an internal thread

locating and piloting a spout which is initially fully retracted into the container; a closure member having a rim portion received on the spout support member where the latter is mounted on the container flange, with a closure retainer ring clamped onto the container flange to secure the closure member in place; the closure member further including an intermediate portion and a central portion, the central portion being snapped into the outer end of the spout whereby it serves as a spout cap, the intermediate portion having a tab and pull ring connected thereto, and being distinguished from the central and outer portions by break-away lines to facilitate unsealing of the closure when desired by pulling the pull ring and severing the intermediate portion from the outer portion, the end of the intermediate portion opposite the pull ring being permanently secured to the central portion, all portions of the outer closure member being one integral unit of plastic, the spout having an external thread engageable with the internal thread of the spout support when the spout is extended after severing the intermediate portion from the outer portion of the closure member, to facilitate tightening of the extended spout in a sealing relationship against the spout support when the spout is in extended position to facilitate pouring without leakage, the pull ring being sized so that it can be pushed onto the extended spout after removal of the central, spout cap portion from the end of the spout, to thereby keep the cap with the container while pouring contents from the container.

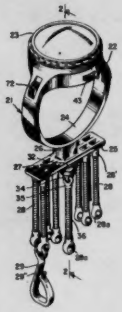
3,804,306
AUTOMATIC PISTOL HOLSTER
Salvador R. Azurin, Bigaa, Legaspi City, Philippines
Filed June 8, 1972, Ser. No. 260,784
Int. Cl. F41c *33/02*
U.S. Cl. 224—2 B **5 Claims**



A holster for a pistol has an outer shell adapted to accommodate the pistol. Located within the shell is a cocking member which engages the slide of the pistol so that, if the latter is initially depressed before being drawn from the holster, the slide will be retained by the cocking member and the pistol will thus be in cocked condition at the time it is subsequently withdrawn from the holster.

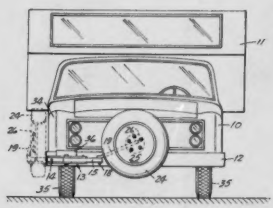
3,804,307
CHAIN KEY HOLDER
Dorothy D. Johnston, 120 1/2 W. Calif. Ave., Glendale, Calif.
Filed Sept. 11, 1972, Ser. No. 288,037
Int. Cl. A44c *9/00*
U.S. Cl. 224—28 C **4 Claims**

A chain key holder has been provided with a hand attaching portion such as a formation of a ring, interconnecting stem of parts or a bracelet that can be attached to the hand when the keys are taken out of the bag or pocket so that upon carrying packages the keys will not be readily dropped when reaching a door needing to be opened by keys. On the ring or bracelet there is a part of a stem portion through which a chain attaching plate that extends laterally thereof will serve to carry a plurality of flexible chain links to which keys are respectively attached. The key chain links are assembled upon the key chain supporting plate so as to extend from the hand holding portion in a convenient manner to be accessible while still in the hand holding grip with an individual key being accessible



to be fitted into a key hole by the fingers without the hand holding portion of the device being released therefrom. A quick detachable means is provided for one of the keys such as the ignition key so that it can be released from the ring holder device and used separately therefrom. This same quick release device may serve to hold a key chain supporting plate accessible upon a depending stem portion.

3,804,308
SPARE TIRE MOUNTING ASSEMBLY
Egbert J. Bodde, Route 1, Trego, Wis.
Filed Sept. 25, 1972, Ser. No. 291,740The portion of the term of this patent subsequent to Aug. 21, 1990, has been disclaimed.
Int. Cl. B62d *43/02*
U.S. Cl. 224—42.06 **7 Claims**

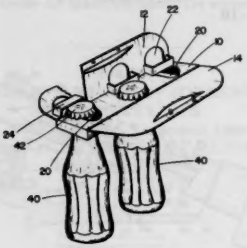


A spare tire mounting assembly particularly suited for front mounting of a spare tire to a vehicle is provided. The mounting assembly includes double pivotal mounting for alternative storage of the spare tire in a central position adjacent the vehicle grill or along the side of the front fender of the vehicle.

3,804,309
BOTTLE CARRIER
Won Il Kwak, No. 8, 2 ka, Yongsan-dong, Seoul, South Korea
Filed July 28, 1972, Ser. No. 275,952
Int. Cl. B65d *9/00*
U.S. Cl. 224—45 BA **2 Claims**

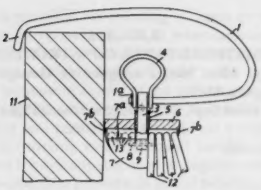
A bottle carrier in which a base member is provided with a plurality of slots for receiving bottles, with handle means being

provided on the base member and movable relative thereto between an inoperative position in which the bottles may be



inserted into the slots, and an operative position in which the bottles are retained in the slots.

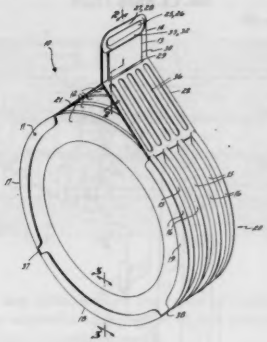
3,804,310
CARRIER FOR WIRE GARMENT HANGERS
Raymond Ralph Wheeler, 3378 Nebraska, Longview, Wash.
Filed Oct. 24, 1972, Ser. No. 299,927
Int. Cl. A45b *3/06*
U.S. Cl. 224—45 T **3 Claims**



The invention provides a carrier for wire garment hangers comprising a support including a bearing surface adapted to receive a plurality of garment hanger hooks in side by side relationship and stop means at each end of said bearing surface, a handle, and means movably coupling said handle to said support at a spacing above said bearing surface.

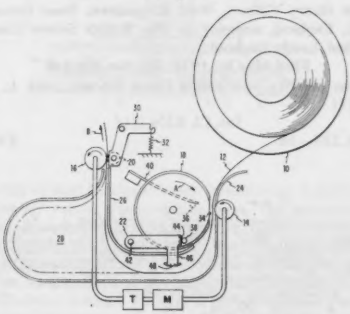
3,804,311
CARRIER FOR DISK-SHAPED ARTICLES
Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Sept. 20, 1972, Ser. No. 290,580
Int. Cl. B65d *37/00*
U.S. Cl. 224—49 **11 Claims**

A carrier for a plurality of disk-shaped articles such as plates, comprising a strip of flexible sheet material which in use is wrapped around and engages the peripheries of the articles, and which is connected together adjacent its ends to form



a hand grip by which the resulting package may be carried. Various connecting means for the hand gripping portions are disclosed.

3,804,312
PAPER TAPE SUPPLY
Richard Edward Lagergren, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 18, 1973, Ser. No. 361,712
Int. Cl. B65h *17/20*
U.S. Cl. 226—35 **6 Claims**

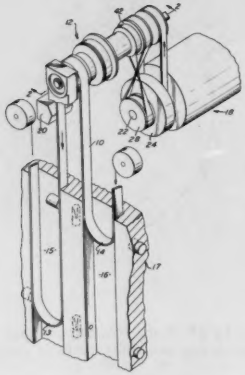


A paper tape supply for drawing paper tape off a supply roll including a flatted pressure roll adapted to have a nip with a feed roll on peripheral surfaces of the pressure roll exclusive of its flat, to grip the tape in the nip of the rolls. A trip lever holds the pressure roll with its flat opposite the feed roll to release the paper tape, and a leaf spring acts on the pressure roll and tends to move it against the trip lever. As an outgoing loop of tape from the rolls shortens, it releases the trip lever with respect to the pressure roll to allow the leaf spring to rotate the pressure roll into its nipped relation with the feed roll to draw the tape off the supply roll and lengthen the outgoing loop of the tape.

3,804,313
TAPE DRIVE

Cecil J. Davis, West Chester, Pa., assignor to Bridge Data Products Corporation, Philadelphia, Pa.

Filed June 3, 1970, Ser. No. 43,059
Int. Cl. B65b 17/20
U.S. Cl. 226—49 10 Claims

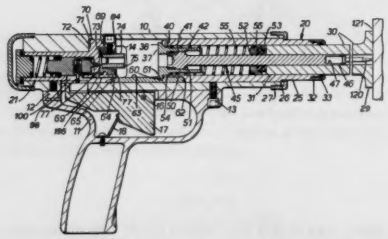


A tape drive using a differential vacuum to impart forward velocity to the tape and a single capstan for governing and permitting selective movement of the tape in opposite directions by an A.C. synchronous motor. Direction change of the tape is achieved by a one-way brake supported by the tape capstan and an electro-magnetic clutch.

3,804,314
POWDER ACTUATED DEVICES

William Henry Gilbert, West Kingsdown, Near Sevenoaks, Kent, England, assignor to The British Screw Company Limited, Leeds, England

Filed May 31, 1972, Ser. No. 258,246
Claims priority, application Great Britain, June 1, 1971, 18280/71
Int. Cl. B25c 1/14
U.S. Cl. 227—10 9 Claims

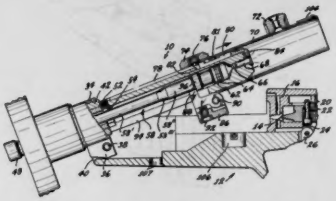


A cartridge actuated stud fixing tool is disclosed which is provided with a two chamber magazine slideable from side to side to bring one chamber to an ejection position and the other to a firing position and axial ejection means operated by the cocking movement of depressing the barrel against a workface which ejection means push the last fired cartridge backwards out of the chamber which is in the ejection position.

3,804,315
POWDER ACTUATED TOOL

Raymond Visher Pomeroy, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Ohio

Filed June 2, 1972, Ser. No. 259,103
Int. Cl. B25c 1/14
U.S. Cl. 227—10 5 Claims

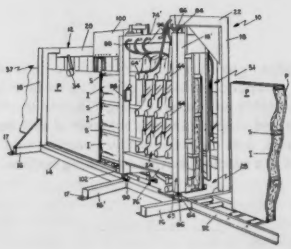


A powder actuated tool, including a barrel for receiving in one end thereof a driveable fastener, a driving ram slideable within the barrel for driving the driveable fastener, and a chamber for receiving an explosive cartridge in the end opposite the driveable fastener. Said barrel pivotally mounted to a handpiece whereby in a firing position the cartridge is nested within a breech block provided in the handpiece, and being pivotable away from said breech block for loading and unloading cartridges. Said barrel including a sleeve having a finger adapted to engage and dislodge a cartridge from its chamber, and further including a dog adapted to engage the driving ram for moving the driving ram rearwardly within the barrel. Said dog for moving the driving ram and said finger for retracting the cartridge being cooperative whereby the return of the driving ram creates air pressure behind the cartridge at a point prior to full retraction of the driving ram, and at said point having the finger engaging (and thus dislodging) the cartridge whereby the continued retraction exerts a propelling force to propel the cartridge out of the barrel end.

3,804,316
FASTENER PANEL CONSTRUCTION

Charles Kay, Alto, Mich., assignor to George D. Baldwin, Grand Rapids, Mich.

Filed Sept. 11, 1972, Ser. No. 287,616
Int. Cl. B27f 7/02
U.S. Cl. 227—40 15 Claims



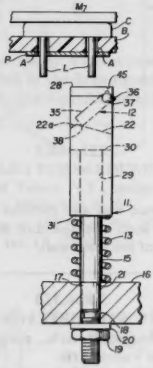
Apparatus for fabricating structural building units from a pair of panels and a plurality of stringer members including a framework for positioning the panels in a spaced-apart relationship and for supporting stringer members longitudinally and in spaced-apart position therebetween. The panels and stringers are advanced in incremental steps through special clamping and fastening means having a plurality of automatic fastening machines for driving fasteners through the panels into the stringer members in a first section. The panels and

stringers are automatically indexed forwardly and a second section is fixed in a similar manner. The advancing and fastening steps are repeated automatically until the entire assembly is secured in like fashion to thereby provide a rigid unit. Insulating material may be positioned between the panels and stringers to provide an insulated panel for exterior wall construction.

3,804,317
WIPING ANVIL ASSEMBLY FOR BENDING COMPONENT LEADS

John R. Gelzer, 4660 Kenny Rd., Columbus, Ohio

Filed Nov. 24, 1971, Ser. No. 201,737
Int. Cl. B25c 7/00
U.S. Cl. 227—155 **10 Claims**



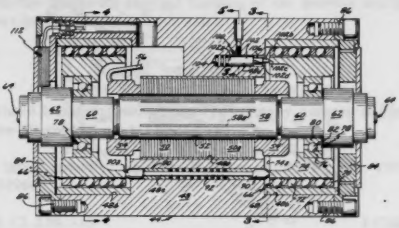
Apparatus is provided for bending of leads or terminals of electric circuit components such as when assembled with a mounting board of the printed circuit board type. This apparatus includes a driving head adapted to be supported for reciprocating movement axially of the unbent component lead and a wiping anvil interposed between the driving head and component lead and pivotally supported on a collar which is mounted on the driving head for axial reciprocating movement. The anvil is normally disposed in angular relationship to the axis of movement to provide an initial bending of the component lead as the assembly is displaced toward the component lead with the driving head subsequently bearing against the anvil to complete the bending operation by pivoting of the anvil as a consequence of relative reciprocating movement of the anvil supporting collar and driving head. The apparatus is capable of effecting an angular bend of greater than 90°

3,804,318
FRICTION WELDING APPARATUS

Johan August Louw, Orange, and Robert Earle Ghiselin, New Port Beach, both of Calif., assignors to Textron, Inc., Santa Ana, Calif.

Filed Aug. 24, 1972, Ser. No. 283,608
Int. Cl. B23k 27/00
U.S. Cl. 228—2 **11 Claims**

Friction welding apparatus for welding together workpieces of relatively small diameter, thus requiring relatively high rotational speed of one of the workpieces, there being angular contact bearings including pre-load biasing means for urging such bearings in a given direction to maintain such contact bearing operational wherein a high speed rotor or spindle is employed for rotating workpieces at its opposite ends and non-rotatable workpieces are substantially simultaneously brought into engagement from opposite ends. More particularly, such apparatus comprises high speed bearings which are preloaded with a force which is substantially constant

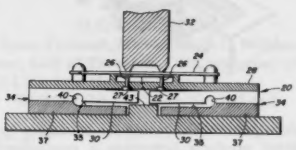


throughout any imbalance of forces on or movement of the rotor due to imprecise engagement of said non-rotatable elements with said rotatable elements.

3,804,319
COMPENSATOR BASE FOR LEAD-FRAME BONDING

Benjamin Piechocki, Bethlehem, Pa., assignor to Western Electric Company Incorporated, New York, N.Y.

Division of Ser. No. 207,854, Dec. 14, 1971, Pat. No. 3,729,810. This application Feb. 16, 1973, Ser. No. 333,267
Int. Cl. B23k 19/00
U.S. Cl. 228—6 **5 Claims**



Bonding of lead frames to ceramic substrates is performed on a bonder with a compensating base. The compensating base includes a series of cantilever spring elements attached to a rigid support. The elements are reduced in cross-sectional area near the point of attachment to the rigid support. A free end of each of the spring elements is placed under each point of the substrate to which a lead is to be bonded. The elements accomodate to variations in thickness and waviness of the substrate so that it does not crack during the bonding operation.

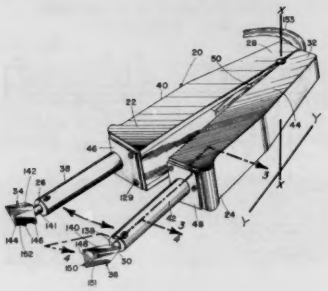
3,804,320
PACK EXTRACTOR

Harold F. Vandermark, Blue Bell, Pa., assignor to Nu-Concept Computer Systems, Inc., Norristown, Pa.

Filed Sept. 13, 1972, Ser. No. 288,613
Int. Cl. B23k 1/00
U.S. Cl. 228—19 **10 Claims**

A hand tool for extracting integrated circuit packs from printed circuit boards to which the pins of said pack have been soldered. The tool includes a pair of pivotable arms each of

which carries an electrically heated tip. The tips include planar surfaces and hook means for clampingly engaging the



pack therebetween, heating the pins of the pack to desolder them and extracting the pack once desoldered.

3,804,321

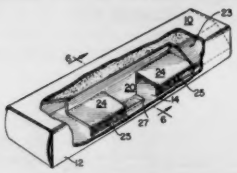
REINFORCED MULTIPLE PRODUCT CARTON

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,722

Int. Cl. B65d *5/10, 5/50*

U.S. Cl. 229—38 **10 Claims**



A one-piece paperboard carton for packaging two or more different sized products comprises a conveniently shaped outer carton having a secondary product inner compartment formed therein by at least two interior wall panels, said interior wall panels being connected together and extending respectively between two adjacent side walls of the carton with the added feature that one of the interior wall panels has as an integral part thereof a bridge member which is attached between opposed side walls of the carton to insure that, upon erection of the carton from a flattened condition, there is no possibility that the two interior wall panels will not assume their preferred right angle relationship with respect to one another when forming the separate inner compartment within the carton.

3,804,322

PLASTIC BAG HAVING ARCUATE CLOSED END AND ARCUATE LIPPED OPEN END

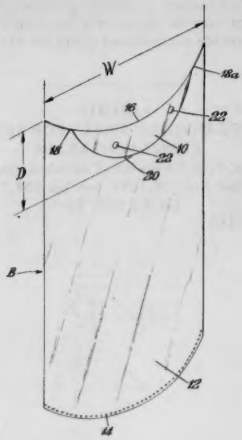
Alvin E. Ericson, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 14, 1971, Ser. No. 162,376

Int. Cl. B65d *33/14*

U.S. Cl. 229—53 **2 Claims**

A bag for packaging food, particularly meat, is composed of tubular, flexible, plastic film sealed at one end to provide an arcuate closed end, the rear wall of the tubular bag remote from the closed end being arcuate and generally parallel to the closed end, the end of the front wall of the tubular bag remote from the closed end also being arcuate and having a cut-out portion generally central of its width of a different radius from



the radii of the closed end and the end of the rear wall, the rear wall having at least one aperture in the area underlying the cut-out portion of the front wall.

3,804,323

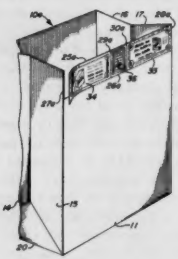
SHOPPING BAG WITH DETEACHABLE COUPON

Milton M. Bemel, Scottsdale, Ariz., assignor to Warren F. B. Lindsley, Paradise Valley, Ariz.

Filed Feb. 4, 1972, Ser. No. 223,456

Int. Cl. B65d *31/12, 33/00*

U.S. Cl. 229—53 **5 Claims**



Shopping bag with detachable coupon portion for advertising communication and shopping convenience.

3,804,324

TABLE TOP, NOISE SUPPRESSED CENTRIFUGE

Hartmut Sinn, and Hans Stallmann, both of Osterode, Germany, assignors to Herseus-Christ GmbH, Osterode, Germany

Filed Oct. 6, 1972, Ser. No. 295,559

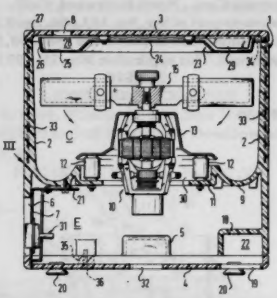
Claims priority, application Germany, June 27, 1972, 2240336

Int. Cl. B04b *7/02*

U.S. Cl. 233—24 **20 Claims**

A centrifuging chamber, with a motor therebeneath to drive the centrifuging elements is formed interiorly of a housing, the housing sidewalls, internal structural features of the housing,

and support elements for the motor being of structurally hard foamed, or cured foam material, preferably polyurethane



cured foam. Where necessary, a metal mesh or grid preferably steel, can be embedded in the housing structure, by foaming the material around the steel reinforcement.

3,804,325

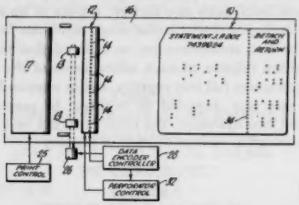
96 COLUMN CARD TURNAROUND DOCUMENT

John T. Potter, Locust Valley, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed Aug. 4, 1972, Ser. No. 277,898

Int. Cl. G06k *1/02*

U.S. Cl. 234—41 **1 Claim**



The specification and drawings disclose a method and apparatus for forming data processing cards where information is encoded on the card by means of punches which additionally form a perforated parting line in the card.

3,804,326

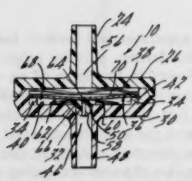
THERMAL VACUUM VALVE

Elmer L. McIntire, Northville, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1972, Ser. No. 318,949

Int. Cl. G05d *23/02*

U.S. Cl. 236—92 **7 Claims**



In a motor vehicle having a source of vacuum such as the manifold vacuum and a vacuum utilization means, a thermal vacuum switch is interconnected in the conduit between the source and the utilization means for controlling the flow of vacuum according to ambient temperature. The thermal vacuum valve is sealed against vauum leaks between the input and output ports of the valve by the cooperation of a resilient umbrella-shaped dump valve and smooth broadside bimetal disc. Additionally, the structural shape of the valve housing affords the means for thermal bonding of the housing and the cover for preventing vacuum leaks.

3,804,327

ELASTIC SUPPORT FOR GUARD RAILS

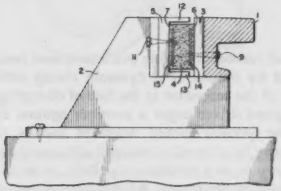
Ruthard J. Dohse, Essen-Bredeney, Germany, assignor to Elektro-Thermit G.m.b.H., Berlin, Germany

Filed Apr. 19, 1972, Ser. No. 245,445

Claims priority, application Germany, May 10, 1971, 2122960

Int. Cl. E01b *7/10, 5/18*

U.S. Cl. 238—18 **1 Claim**



The disclosure is an improvement in a railway frog including a guard rail and support therefor. The improvement comprises resilient means between the guard rail and the support, with the stroke of the guard rail being greater in the longitudinal direction to the rail than transversely thereto.

3,804,328

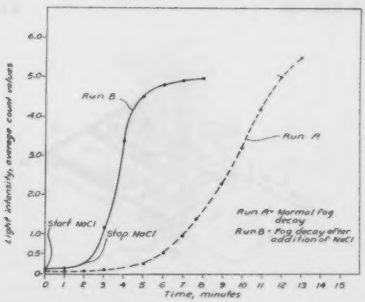
FOG ABATEMENT

George A. Lane, Freeland, Mich.; Robert L. Williams, and Ben A. Fortner, both of Thornton, Colo., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1972, Ser. No. 297,468

Int. Cl. E01h *13/00;* **B05b** *17/04*

U.S. Cl. 239—2 R **3 Claims**



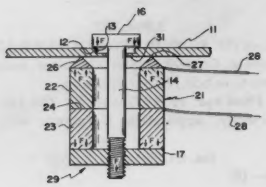
Disclosed is a method for dissipating a fog by modifying the fog particles with a chemical agent. An aerosol dispersion of the chemical agent is formed and passed through a device which shapes the dispersion into vortex rings. The vortex ring dispersion is then discharged from the device and directed into the fog, in which it modifies the size distribution of the fog particles to improve visibility.

3,804,329

ULTRASONIC GENERATOR AND ATOMIZER APPARATUS AND METHOD

John G. Martner, Atherton, Calif.

Filed July 27, 1973, Ser. No. 383,331
Int. Cl. B05b 17/04
U.S. Cl. 239—4 25 Claims



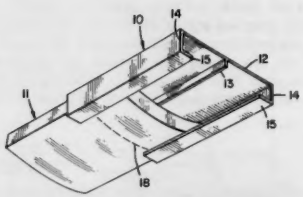
A flexural resonator having predetermined resonant modes is mounted by means of a dynamic clamp which prevents movement of the resonator at the line of clamping. An electrically energized driver urges a member against the resonator exciting the predetermined resonant modes therein. The resonator may be utilized to transmit ultrasonic signals operating, for example, as a predator repellant, or as an atomizer of fluids introduced thereupon. Atomization occurs due to driver displacement amplification in the resonator at the point where fluid is directed onto the resonator surface, whereupon the fluid is thrown off of the resonator surface in small droplet form. Atomized droplet size is a function of the resonator amplitude and frequency.

3,804,330

VAPOR RELEASING DEVICE

Alexander Miller, Jr., Modesto, Calif.; Victor F. Anderson, Wenonah, N.J.; Raymond W. Holt, Pleasant Hills, and Robert W. Fortenbach, Lafayette, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 15, 1973, Ser. No. 323,591
Int. Cl. A62l 9/04
U.S. Cl. 239—34 8 Claims



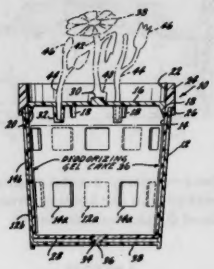
A vapor releasing device for reodorants, pesticides or other vaporous materials is defined by a flat upper portion having a downwardly protruding centrally located ridge on the underside thereof. The upper portion has opposing downwardly extending walls which contain inwardly protruding lips forming a slot or opening. A flexible solid containing the vaporous material is engaged in the slot-like opening.

3,804,331

DECORATIVE ROOM AIR TREATING DEVICE

John S. Levey, Westlake Village, Calif., assignor to Days-Ease Home Products Corp., North Hollywood, Calif.

Continuation-in-part of Ser. No. 353,086, April 23, 1973, abandoned, Continuation-in-part of Ser. No. 250,181, May 4, 1972, abandoned. This application May 25, 1973, Ser. No. 363,810
Int. Cl. A24f 25/00
U.S. Cl. 239—59 15 Claims



A decorative room air treating device in the shape of a flower pot or other aesthetically appealing container having a body portion with circular cross-sections, as for example, one constructed of a pair of concentric frusto-conical plastic containers dimensioned to fit closely, but rotatably one within the other. The top end of the inner container is closed by a transverse wall from which projects upwardly a plastic simulated horticultural item, such as a flower. A cake of an air treating substance is disposed within the inner container and the side walls of the two containers are so orificed that in one rotational position relative to each other, none of the orifices of the two containers fall into registry, but in a second rotational position, they are disposed in registry. In positions intermediate the two extremes, the orifices of the two containers may be disposed in various degrees of registry.

3,804,332

AIR BOOM CROP SPRAYER

Hugo Clayton Welch, Ashland, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Jan. 22, 1973, Ser. No. 325,501
Int. Cl. A01n 17/08; B05b 1/20
U.S. Cl. 239—77 7 Claims

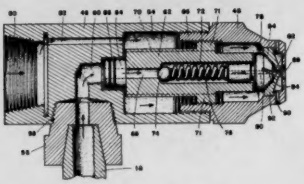
Disclosed is an apparatus and method for spraying crops, particularly low and densely growing crops such as spinach and the like. A blower in the form of an axial flow fan is oriented to move air in a direction generally parallel to the ground and into a first or central plenum chamber. The blast of air is directed from the first chamber and turned generally ninety degrees in a direction radially of the fan into at least one boom or wing-like chamber extending outwardly of the first chamber. The air is then permitted to leave each wing chamber and the center chamber in a generally downward and rearward direction through an opening or nozzle in the chambers at which time the air picks up insecticide or the like from a spray manifold and nozzle system located generally along

the opening in the chambers. The spray laden air thus leaves the chambers, being downwardly and somewhat rearwardly directed, such that as the apparatus is moved through a field of crop, the spray will penetrate the foliage and displace the stagnant air trapped within the foliage.

3,804,333
LIQUID WASTE BURNER

William E. Kramer, Pittsburgh, and John Scarr, Verona, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 16, 1972, Ser. No. 297,587
Int. Cl. B05b 1/34
U.S. Cl. 239—124 **4 Claims**



A system for burning waste lubricating oil along with regular fuel oil in a conventional heating burner. The waste oil is supplied only after the burner has thoroughly heated up on burning regular fuel oil. A snorkel device is provided to assure that only liquids and no solids are drawn into the system. A constant displacement pump in the waste oil flow path serves the purpose of adjusting the ratio of regular fuel to waste oil. The waste oil is supplied directly to the swirl chamber of the burner nozzle.

3,804,334
CONTROLLED MOISTURE EMITTER

Byron V. Curry, 6 W. Orange Grove, Arcadia, Calif.

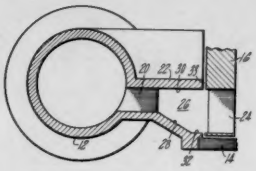
Filed Feb. 9, 1973, Ser. No. 330,984
Int. Cl. B05b 1/02
U.S. Cl. 239—276 **22 Claims**

A watering device intended for use in watering plants includes a body with a bore adapted to receive a resilient water supply tube solvent welded at one end. A second part is a threaded member adapted to make an interference fit with an internal or external wall of the body and to be adjustable therewith such that the thread groove and a body wall provide a channel of adjustable length to alter the water flow rate from the tube through the body. Relative taper between the body wall and the threaded member may also provide flow adjustment as the position of the member in the bore is altered to change the degree of interference fit between the bore and the threaded member, changing the channel depth, as defined between the body wall and the thread groove. Alternatively the body may be internally or externally threaded and receive a cylindrical ring or post to define the water flow channel.

3,804,335
VANELESS SUPERSONIC NOZZLE

John S. Sohre, 93 Grier Rd., Vernon, Conn.

Filed May 21, 1973, Ser. No. 362,403
Int. Cl. B05b 1/34; F01d 1/02
U.S. Cl. 239—289 **19 Claims**

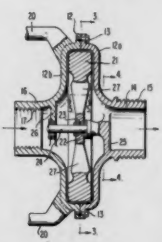


A converging-diverging nozzle unit for supersonic expansion in turbines is presented wherein a plurality of converging nozzle segments open into a common diverging chamber at or near the throat of the converging nozzles. Convergence and divergence may occur in different directions in the nozzle unit; with reference to a rotating turbine wheel, convergence occurs in a direction substantially tangential with respect thereto, and divergence occurs substantially radial with respect thereto.

3,804,336
STABILIZED FIRE HOSE NOZZLE

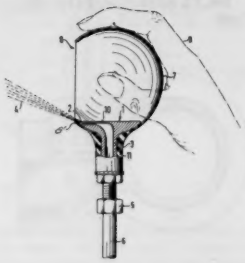
Douglas F. Koeppe, 924 W. Ave. F., Kingsville, Tex.

Filed Dec. 22, 1972, Ser. No. 317,597
Int. Cl. B05b 1/34
U.S. Cl. 239—383 **10 Claims**



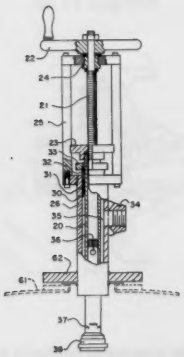
A fire hose nozzle is equipped internally with a turbine-type rotor having an evenly distributed peripheral mass. The high velocity water stream passing through the nozzle drives the rotor with the result that the nozzle becomes gyroscopically stabilized with a resulting resistance to change in orientation. The nozzle is preferably equipped with handles. The gyro rotor may consist of a single rotor body or a pair of counter-rotating bodies.

3,804,337
FLUID DISTRIBUTOR
Klaus Schmidhuber, Seestr. 34, 8031 Steinebach, Worthsee; Wolfgang Link, Buchenstr. 19a, 808 Furstenfeldbruck, and Heribert Sturm, Dreifaltigkeitsberg 55, 8311 Rimbach, all of Germany
Filed June 18, 1973, Ser. No. 370,782
Int. Cl. B05b *1/28, 11/00*
U.S. Cl. 239—513 7 Claims



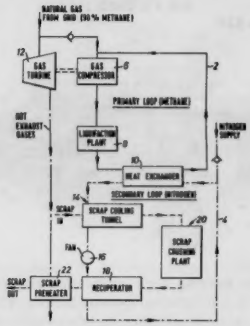
The invention relates to a variable outlet device for producing a controllable jet of a fluid, with a deflector mounted on the outlet end of the pipe or hose which delivers the fluid, the deflector having a deflecting surface which, starting near the edge of the jet, extend at first in the direction of the jet and then curves around in an axial plane of the pipe or hose with a radius of curvature several times greater than the internal diameter of the pipe or hose.

3,804,338
COMBINED TANK RINSING VALVE
James W. Williams, 3rd, 705 Whites Rd., Lansdale, Pa., and John S. Fetterolf, 750 Spruce St., Royersford, Pa.
Filed Jan. 10, 1973, Ser. No. 322,413
Int. Cl. B05b *1/32, 15/02*
U.S. Cl. 239—541 5 Claims



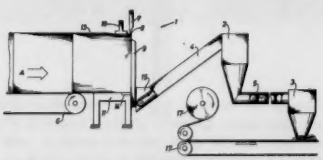
A tank spraying lance is adapted to have two positions, in one of which a spray is provided which is adapted to clean the inside surface of the tank, and in the other position these spray nozzles are retracted and a valve is closed by a compressible seal ring.

3,804,339
METHOD OF FRAGMENTIZING METAL STRAP
William Robert Laws, Worcester Park; Nicholas Arthur Townsend, and Peter James Barham, both of Bexley, all of England, assignors to British Steel Corporation, London, England
Filed July 7, 1972, Ser. No. 269,594
Claims priority, application Great Britain, July 29, 1971, 35692/71
Int. Cl. B02c *23/00*
U.S. Cl. 241—17 13 Claims



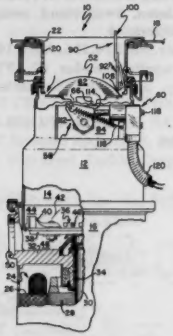
A process for the preparation of steel scrap either for charging to a furnace or for roll compaction. The scrap is pressed into bundles and cooled nitrogen is then passed through the bundle to reduce the temperature of the steel scrap so that it becomes brittle. The cooled bundle is then fragmented in a crusher. The cooled nitrogen is supplied from a heat exchanger into which a cooling agent, liquid methane, is fed, the methane emerging from the heat exchanger in the gaseous phase.

3,804,340
METHOD AND APPARATUS FOR PRODUCING DRY-DEFIBRATED CELLULOSE
Karl Ake Ekman, Harnosand, and Nils Verner Blomqvist, Domsjoverken, both of Sweden, assignors to Mo och Domsio AB, Ornskoldsvik, Sweden
Filed July 12, 1972, Ser. No. 271,101
Claims priority, application Sweden, July 13, 1971, 9076/71
Int. Cl. B27l *11/08*
U.S. Cl. 241—28 17 Claims



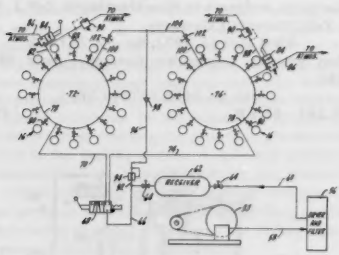
Method and apparatus are provided for producing dry disintegrated cellulose pulp such as cellulose fluff from bales of cellulose pulp in sheet form, by cutting the pulp sheets in the bale into strips while still located in the bale, and thereafter defibrating the strips, with an optional intermediate shredding step prior to defibrating.

3,804,341
WASTE FOOD DISPOSER
Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed June 9, 1972, Ser. No. 261,530
Int. Cl. B02c *23/04*
U.S. Cl. 241—32.5 **15 Claims**



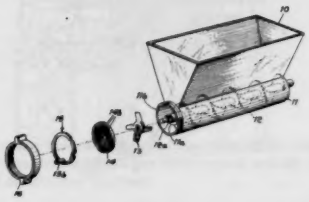
There is disclosed a waste food disposer having a closure for substantially blocking the throat leading from a sink to a comminutor to prevent ejection of waste food particles. In the open position, the closure does not substantially obstruct the throat of the disposer. A handle is provided for moving the closure between the open and closed positions. The handle is arranged to move the closure from the fully closed position to an intermediate position partially blocking the throat and, after a delay, then moving the closure to the fully open position.

3,804,342
CRUSHER RELEASE CLEARING SYSTEM
Rudolph J. Gasparac; Robert J. Pokora, and Ulhas S. Sawant, all of Milwaukee, Wis., assignors to Rexnord, Inc., Milwaukee, Wis.
Filed Mar. 1, 1972, Ser. No. 230,798
Int. Cl. B02c *25/00*
U.S. Cl. 241—37 **3 Claims**



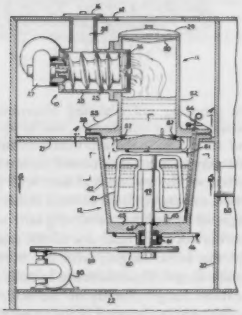
This is concerned with a pneumatic loading, release and clearance system for cone crushers and is more specifically concerned with a system that can be used with a plurality of crushers, for example two. It is also concerned with a system that, in addition to fully releasing the pneumatic pressure between the main frame and tilting ring of a crusher, also has a hydraulically-operated system for elevating the tilting ring and bowl so that a plugged or jammed crusher can be cleared. It is also concerned with a pneumatic release system which is specifically constructed so that it may be substituted for the conventional spring-release system on machines now in the field with a minimum of time, effort and expense.

3,804,343
MEAT SAMPLING DEVICE
John G. Moffitt, Phoenix, Ariz., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Dec. 6, 1972, Ser. No. 312,535
Int. Cl. B02c *18/36*
U.S. Cl. 241—37.5 **7 Claims**



A device to sample meat passing out of a meat grinder. The device comprises a tubular member mounted adjacent the grinder plate and configured to divert a predetermined amount of the meat that passes through the grinder plate to provide the desired sample.

3,804,344
APPARATUS FOR PREPARING DUPLICATING MATERIALS
Eric Perry, Arcadia, Calif., assignor to Nobilium Products, Inc., Los Angeles, Calif.
Filed Feb. 5, 1973, Ser. No. 329,684
Int. Cl. B67d *5/62*
U.S. Cl. 241—65 **12 Claims**



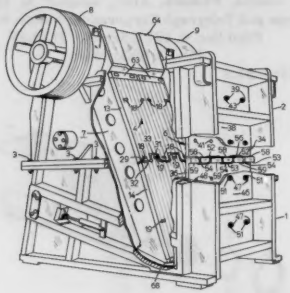
An apparatus for preparing duplicating materials, such as reusable gels used in the manufacture of dental restorations, is disclosed. After being ground, the material is melted in a meltor and then placed in a holding tank. The temperatures in the meltor and holding tank are separately controlled to permit the apparatus to provide a continuous source of usable duplicating material.

3,804,345

JAW CRUSHER DIE MOUNTING

Ronald B. DeDiemar, Brown Deer, Wis., assignor to Barber-Greene Company, Aurora, Ill.

Filed Sept. 15, 1972, Ser. No. 289,673
Int. Cl. B02c 1/04, 1/10
U.S. Cl. 241—264 2 Claims



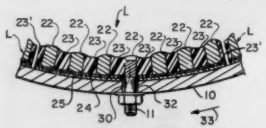
In a large size jaw crusher for stones and the like a stationary housing wall and a pitman are each provided with a pair of endwise aligned die plates. Sets of mounting bolts secure the die plates, respectively, to the housing wall and pitman, and each pair of die plates is provided with an interlocking finger joint across its width. The interlocking finger joint couples the endwise aligned die plates together so that lateral thrust components of the crushing force will be transmitted from either die plate to its companion die plate, and the mounting bolts for both die plates will complement each other in taking up such lateral thrust components.

3,804,346

LINER FOR GRINDING MILLS

Telfer E. Norman, 37 Hillside Dr., Denver, Colo.

Filed Sept. 11, 1972, Ser. No. 287,779
Int. Cl. B02c 17/22
U.S. Cl. 241—182 10 Claims



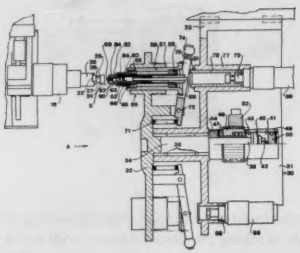
Liners for grinding mills having alternating bars of alloy steel and strips of an elastomer, such as rubber, bonded together and to a backing plate which is sufficiently flexible that the liner may be manufactured flat, but drawn against an arcuate portion of the cylindrical side wall of the mill by attaching bolts. Converging slots formed in the center bar of the liner are engaged by bolt heads having converging sides. For a ball mill, the bars of each liner are of the same height and the strips are of the same height, with the bars initially slightly higher than the strips. The liners are installed so that the bars and strips extend longitudinally of the mill, the effect of the balls and material being ground being to produce a corrugated or ripple wave surface on each liner which provides a lifting effect to the grinding media and causes the balls to bounce or oscillate. For rod mills, each liner has several center bars and strips of a greater height, with a series of one bar and one strip of successively lesser heights on each side of the center bars and strips. Wear during use produces not only a ripple wave contour of the bars and strips but also a higher portion of the liner toward the direction of rotation from the initial highest portion, which accentuates the lifting effect on the grinding media. A liner for a segment of the end wall of the mill includes alternating bars and strips of alloy steel and rubber, with the center bar being disposed along a radius of the end wall and the remaining bars and strips parallel thereto.

3,804,347

WIRE COILING APPARATUS

Walter Angst, Kloten, Switzerland, assignor to Meteor AG, Glattbrugg, Switzerland

Division of Ser. No. 816,256, April 15, 1969, Pat. No. 3,672,409. This application Mar. 17, 1972, Ser. No. 235,598
Claims priority, application Switzerland, Apr. 19, 1968, 5847/68
Int. Cl. H01f 41/06
U.S. Cl. 242—7.09 4 Claims



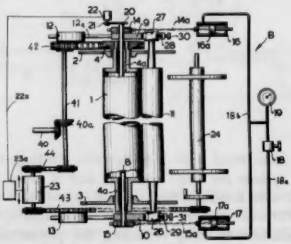
A wire winding apparatus comprising at least one winding mandrel and a drive mechanism for driving said winding mandrel. A winding spindle is coupled with the drive mechanism and an axially displaceable insert means is rigidly connected for rotation with the winding spindle. The insert means possesses two portions which are displaceable relative to one another and carrying cooperating wire clamping jaw means, one of said portions being constructed to operatively engage with said winding mandrel when situated opposite said winding spindle. There is also provided means for selectively engaging and disengaging the winding mandrel from the winding spindle through relative axial displacement of the winding spindle and the winding mandrel.

3,804,348

REGULATED WINDUP APPARATUS

Markus Ruscher, Schonau, and Walter Kruckels, Hausen, both of Germany, assignors to Maschinenfabrik Zell J. Kruckels KG, Zell (Wiesental), Germany

Filed June 12, 1972, Ser. No. 263,722
Claims priority, application Germany, June 18, 1971, 2130020
Int. Cl. B65h 59/00, 17/02
U.S. Cl. 242—67.1 R 12 Claims



A web, such as the warp in a loom, is wound up on a warp beam after passing over a transporting roller which is driven at

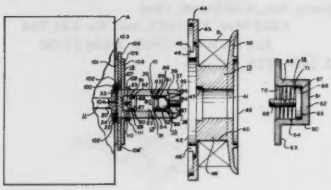
a constant speed, and a control roller mounted on a support which turns about the axis of the transporting roller. When the speed of the wound up web varies, the tension in the web changes and the support of the control roller is angularly displaced by the web and operates adjusting means of a variable transmission by which the warp beam is driven so that a desired constant tension can be maintained in the warp.

3,804,349

APPARATUS FOR CONTROLLING THE TENSION OF THE LINE IN A FISHING REEL

Henry O. Serini, and Douglas Sutterfield, both of Glen Ridge, N.J., assignors to Universal Tackle Corporation, Atlantic Highlands, N.J.

Filed Apr. 12, 1973, Ser. No. 345,641
Int. Cl. A01k *89/02*
U.S. Cl. 242—84.5 A **9 Claims**



An apparatus for controlling the tension of the line in a fishing reel which includes a spool which is connected to a crank and which is attachable to the handle of a fishing rod. Self-compensating alignment of the elements in a system for braking the rotation of the spool is provided by a snap ring, a retaining pin, and an actuating pin which cooperate with the braking system elements and which are retained in an annular groove, an aperture and slots in a hollow cylindrical shaft on which the spool is journalled. Dissipation of heat generated during braking is provided by tapered elements in the braking system. Sealing rings positioned in annular grooves in pistons, and a braking pressure transmitting medium located between the sealing rings, are provided in the hollow cylindrical shaft to interact with the braking system to maximize the adjustability and smoothness of operation of the braking pressure which is generated by an adjusting cap and which is transmitted through the hollow cylindrical shaft to the braking system. A resilient ring member fits onto the outer surface of the hollow cylindrical shaft and interacts with the braking system to provide biased return for reducing the braking pressure. A biased connector in the adjusting cap prevents extraneous forces from affecting the generated pressure which is transmitted to the braking system. A spherical member positioned intermediate the biased connector and pistons in the hollow cylindrical shaft prevents further variation of the generated pressure in transmission to the braking system, and a plug member is provided which seals the hollow cylindrical shaft to prevent tampering or disassembly.

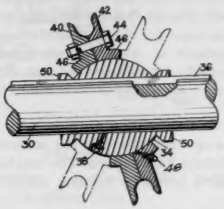
3,804,350

CABLE SPOOLING GUIDE

Leonard H. Williams, P.O. Box 233, Umatilla, Oreg.

Filed June 14, 1973, Ser. No. 369,982
Int. Cl. B65h *57/28*
U.S. Cl. 242—157.1 **6 Claims**

A guide for paying out and feeding in a cable relative to a cable drum includes a pulley mounted on a ball for axial rotation and for limited pivotal movement on an axis disposed perpendicular to said axis of rotation, the ball being mounted on a shaft for reciprocative movement along the latter substantially



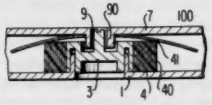
parallel to the axis of rotation of the cable drum, whereby the pulley guides the cable as the latter spools spirally relative to the axial direction of the frum.

3,804,351

MAGAZINE

Keiji Kaneko, Minami Ashigara-Machi; Yasutoshi Okuzawa, Tokyo, and Saburo Numata, Omiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 15, 1971, Ser. No. 162,899
Claims priority, application Japan, July 15, 1970, 45-61862
Int. Cl. G11b *23/10*
U.S. Cl. 242—199 **3 Claims**



A magazine for a movie film or magnetic recording tape having a flangeless take-up shaft has a leaf spring for preventing the film or tape from loosening when winding of the tape by always lightly depressing the edge of the film or tape at the outermost periphery of the winding regardless of the diameter of the winding.

3,804,352

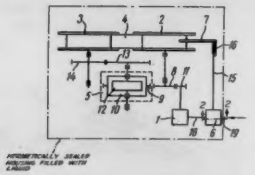
MECHANISM FOR TRANSPORTATION OF AN INFORMATION CARRIER

Vladimir Valerianovich Benderovsky, ulitsa Dymerskaya, 37, kv. 1; Igor Alexandrovich Yastrebov, Delegatsky pereulok, 10, kv. 1; Alexandr Ivanovich Schepotiev, Brest-Litovsky, prospekt, 112, kv. 39; Viktor Mikhailovich Korneichuk, Bulvar Drushby narodov, 7, kv. 170, all of Kiev; Oleg Mikhailovich Vergiliev, ulitsa Marshala Rybalko, 16, korpus, Moscow, and Alexei Petrovich Lysenko, Bulvar IV. Lepse, 57, kv. 114, Kiev, all of U.S.S.R.

Filed Aug. 2, 1971, Ser. No. 168,128
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 **2 Claims**

A mechanism for the transportation of an information carrier in which the information carrier is unwound from a supply spool onto a take-up spool, the latter being driven by a hydraulic motor coupled in non-slip driving relation therewith. A metering valve is connected to the hydraulic motor for controlling the flow of a working liquid thereto from a pressure source and the valve is controlled by a gauge which

responds to the diameter of the information carrier on the take-up reel so that the rate of flow of working liquid to the hydraulic motor is related to the amount of information carrier on the take-up reel whereby the information carrier is driven at a constant linear speed. The mechanism is entirely enclosed within a hermetic housing which is filled with a liquid.

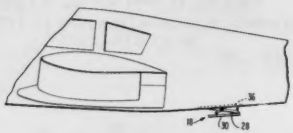


3,804,353

CONDENSER INSTALLATION FOR AIRCRAFT AIR-CONDITIONING SYSTEM

Robert C. Scott, and John A. Flinchum, both of Vero Beach, Fla., assignors to Piper Aircraft Corporation, Vero Beach, Fla.

Filed Aug. 28, 1972, Ser. No. 284,085
Int. Cl. B64d *33/12*
U.S. Cl. 244—57 **9 Claims**



The system includes a compressor driven by the aircraft engine for supplying pressurized heat laden vapor to a condenser. The condenser supplies refrigerant in liquid form to a receiver-dehydrator for delivery to an evaporator through an expansion valve. The evaporator absorbs the heat from the aircraft cabin and the refrigerant vapor returns to the compressor whereupon the refrigerating cycle is repeated. The condenser is extensible and retractable relative to the aircraft between positions dependent therefrom in the air stream and a stowed position within the confines of the aircraft fuselage. Particularly, the condenser is hingedly mounted by a bell crank assembly and is extensible on command during flight or on the ground. When the air-conditioning system is operating, the compressor is automatically declutched from the engine and the condenser is automatically retracted in response to movement of the throttle to a full or near full open throttle position. Also, the compressor is automatically clutched to the engine and the condenser is automatically extended in response to movement of the throttle away from the full or near full open throttle position. In this manner, maximum power is made available at the critical times, such as take-off, while simultaneously the drag of the condenser is eliminated.

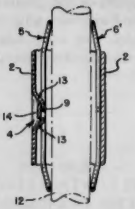
3,804,354

FUEL ROD SPACER SYSTEM FOR NUCLEAR FUEL ASSEMBLIES

Joseph R. Weiss, Byram, Conn., assignor to United Nuclear Corporation, Elmsford, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,018
Int. Cl. G21c *3/34*
U.S. Cl. 248—68 R **8 Claims**

An improved nuclear fuel rod spacer system and support structure is disclosed which includes a cage assembly for receiving a fuel rod in tight bearing engagement therewith. A cage assembly with a fuel rod extending therethrough is constructed to fit within a cell defined by a conventional grid structure and to lockingly engage a specially constructed and cooperating locking structure projecting inwardly of the cell.

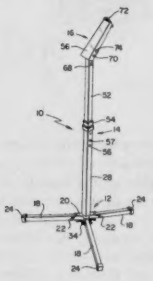


3,804,355

COLLAPSIBLE SUPPORTING STAND

Miroslav Uroshevich, Cincinnati, Ohio, assignor to Sperti Drug Products, Inc., Cincinnati, Ohio

Filed Mar. 17, 1972, Ser. No. 235,716
Int. Cl. A47b *97/00*; **A45d** *21/00*
U.S. Cl. 248—125 **4 Claims**



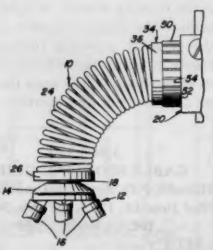
A collapsible supporting stand is disclosed. The tripodal base has legs pivotally mounted at the bottom of a base shaft. The supporting arm is pivotally mounted to a vertical shaft which is slidably mounted in the base shaft. Adjusting means are provided for the supporting arm and the vertical shafts.

3,804,356

FLEXIBLE SUPPORT DEVICE FOR CAMERAS

Mac L. Olds, 7145 W. 94th St., Los Angeles, Calif.

Filed Mar. 29, 1973, Ser. No. 346,144
Int. Cl. G03b *17/56*
U.S. Cl. 248—179 **2 Claims**



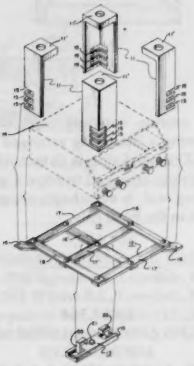
A flexible support device for cameras which is disposed and removably affixed between a camera and a stationary mount-

ing unit, the support device having a main central flexible body consisting of a spring-like continuous coil attached at its lower end to a mounting plate, and having the upper opposite end thereof secured to a base plate to which a mounting head is rotatably attached thereto, the mounting head being provided with an extended threaded shaft for attachment to a camera.

3,804,357
CAR STEREO EXPANSION LOCKING KIT

Ronald R. Robinett, 1015 Deakin, Moscow, Idaho; Rodney D. Proctor, P.O. Box 53, Deary, Idaho; Allan M. Ranstrom, Arimo, Idaho, and Norman K. Rogers, c/o 1429 E. Alameda, Pocatello, Idaho

Filed Oct. 16, 1972, Ser. No. 298,123
Int. Cl. F16m *13/00*
U.S. Cl. 248—203 **2 Claims**

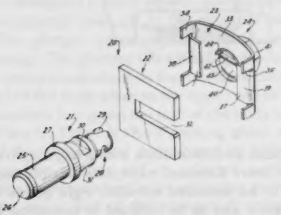


The car stereo expansion locking kit comprises a plurality of cornerposts operable to closely, slidably receive a car stereo, or the like, and having a plurality of horizontally cut lattice receiving slots, a locking lattice including a plurality of rectilinear and transverse lattice strips pivotally mounted at intervals to each other to form a parallelogram and including a pair of diagonally disposed, slot-engaging leaves fastened at diagonal corners of the locking lattice, and a lock operable to selectively lock the locking lattice into the slots of the cornerposts.

3,804,358
FASTENER ASSEMBLY

Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,565
Int. Cl. F16b *21/02*
U.S. Cl. 248—205 R **3 Claims**

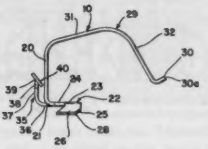


A fastener assembly for fastening two members together and for providing a hanger element on a bracket with an opening therein. The assembly includes a stud member adapted for passage through the opening in the bracket. Means are provided on the assembly to restrict the passage of the stud member through the bracket so that a hanger portion extends from one side of the bracket and a locking portion extends from the other side of the bracket. Locked means are on the assembly which are adapted to engage with the locking portion of the stud member and retain the stud member in a fixed position with respect to the bracket. Finally, the locked means and the stud cooperate to facilitate the rapid interengagement and disengagement therebetween as desired so that the fastener assembly can be rapidly and efficiently associated with a bracket at a variety of different locations thereon.

3,804,359
CHANNEL CLIPS

William J. Cumber, Chardon, Ohio, assignor to Erico Products, Inc., Cleveland, Ohio

Continuation of Ser. No. 859,229, Aug. 13, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 228,019
Int. Cl. H02g *3/12*
U.S. Cl. 248—205 R **16 Claims**

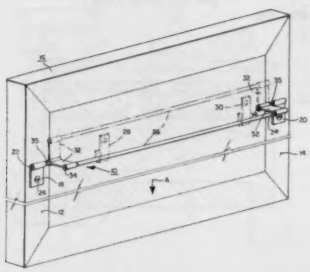


This invention relates to a clip or fastening device for assembly with a channel shaped structural member adapted to be self clamping adjacent one side wall of the channel member for supporting a structural component. The clip includes a body portion which projects from the side wall of the channel having one end thereof provided with prongs which engage beneath the inturned flange on the side wall and an extension which projects toward the base of the channel and terminates in prongs for engaging the same. The clip is resiliently held in position in the channel member between the spaced set of prongs. A suitable attaching member formed either integrally with the body portion or separate therefrom is adapted to receive the edge portion of the wall of the component and secure it to the clip.

3,804,360
FRAME HANGERS

Edmund J. Stecker, 2842 Mehdon Blvd., Beachwood, Ohio

Filed Aug. 3, 1972, Ser. No. 277,749
Int. Cl. A47g *1/16*
U.S. Cl. 248—489 **3 Claims**



A frame hanger for a picture frame, mirror frame or the like includes hinge members secured to the frame in horizontally

spaced relationship to provide a horizontal pivot axis. A linear support member extends in a horizontal direction generally parallel to the pivot axis and is pivotally mounted to the hinge members through laterally offset transition sections disposed at opposite ends of the support member, whereby the pivot axis is parallel to, and laterally spaced from the support member. Preferably, the support member is linearly adjustable for permitting use of the frame hanger with frames of different horizontal dimensions. Preferably, the support member is supported by at least two horizontally spaced hanger mounts which are secured to a wall or other supporting structure.

3,804,361

PLANT FOR MANUFACTURING REINFORCED CONCRETE CONSTRUCTION PANELS

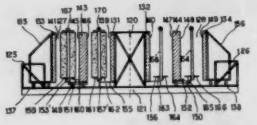
Raymond Francois Emile Camus, 27, Avenue Foch 75, Paris 16°, France

Filed Aug. 11, 1971, Ser. No. 170,910

Claims priority, application France, Aug. 14, 1970, 70.30068; July 9, 1971, 71.25269

Int. Cl. B28b *7/22*

U.S. Cl. 249—78 **3 Claims**



A plant for manufacturing reinforced concrete construction panels including at least one bank of moulds comprising a plurality of generally vertical partitions and electrically heated forms. At least some of the partitions and forms are mounted by rollers on tracks for displacement perpendicular to the major faces of the moulds. Once a mould has been poured and the panel therein hardened, the movable one of its walls is horizontally displaced from the rest of the panel and mould combination. The panel may then be removed by a lifting device. After being cleaned the movable mould wall is moved back into its initial position where it is connected to another form or partition which itself is disconnected from its adjacent form or partition freeing a further panel for removal and enabling the pouring of a further panel without any substantial time delay.

3,804,362

MOULDING MEANS

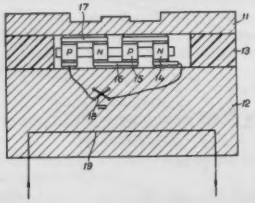
John Stromblad, Vasteras, and Gunnar Johansson, Mora, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of Ser. No. 75,356, Sept. 25, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,119

Claims priority, application Sweden, Oct. 1, 1969, 13542/69

Int. Cl. B29c *1/00*

U.S. Cl. 249—78 **1 Claim**



A plastic mould apparatus having Peltier elements for heating plastic in the mould or cooling the same depending on the current direction in the Peltier elements.

3,804,363

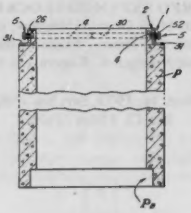
SNAP RING RETAINING FASTENER

David Lang, Mineral Wells, Tex., assignor to Harsco Corporation, Harrisburg, Pa.

Filed Oct. 25, 1972, Ser. No. 300,598

Int. Cl. B28b *7/20*

U.S. Cl. 249—100 **10 Claims**



Apparatus for casting concrete pipe comprising a segmented jacket having a head ring arranged to form a spigot end on the pipe. The head ring is detachably secured in the jacket and a snap ring, arranged to form a groove in the pipe to receive an O-ring seal, is detachably secured by cam urged retaining fasteners to the head ring.

3,804,364

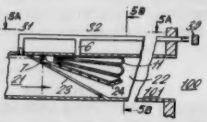
BAG DIAPHRAGMS AND BAG DIAPHRAGM OPERATED AIR DAMPERS

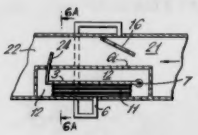
Gudio Amandus De Lepeleire, Heverlee, Belgium, assignor to Danfoss A/S, Nordborg, Denmark

Filed July 28, 1971, Ser. No. 166,954

Int. Cl. F01b *19/02*; **F16j** *3/00*

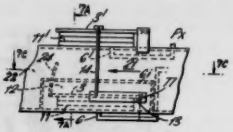
U.S. Cl. 251—43 **8 Claims**

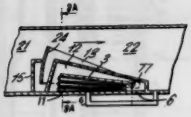


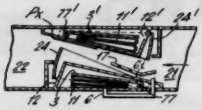


The present invention deals with a bag diaphragm comprising one or more flattened extremely flexible bags assembled together, to be mounted between rigid plates at a variable mean distance and to be inflated in operation by a variable pressure difference, and with an air damper operated by means of a bag diaphragm as mentioned above, this air damper being suitable for air conditioning plants, in constant flow, or constant variable flow, or mixing appliances, in fresh

air and return air ducts, where an air flow is to be controlled, the operation of the air damper being possible without any







electrical or pneumatic energy supply system, due to the particular characteristics of the aforesaid bag diaphragm and particular design of the damper.

3,804,365

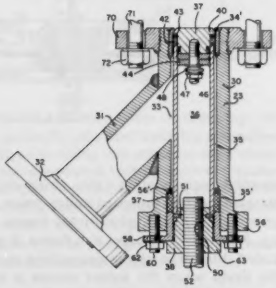
FLUSH BOTTOM TANK VALVE

John S. Fetterolf, 750 Spruce St., Lansdale, Pa., and James W. Williams, 3rd, 705 Whites Rd., Lansdale, Pa.

Continuation-in-part of Ser. No. 104,322, Jan. 6, 1971, Pat. No. 3,658,083. This application Aug. 26, 1971, Ser. No. 175,143

Int. Cl. F16k *29/00*

U.S. Cl. 251—144 **1 Claim**



A flush tank valve having a plunger and two converging passages. One passage is vertical and the plunger operates in it and the other passage goes off to the side and handles the discharge. The plunger opens by withdrawal beyond the discharge passage. The plunger has a packing moving with the plunger and spring compressed so that in closed position it engages the wall of the body close to the upper end of the valve, but in open position it engages the wall of the body beyond the branching of the Y. There is also a packing gland sealing the lower end of the plunger and compressed by spring means, acting between the plunger and an enlarged portion of the body and entirely independent in its operating parts from the packing at the upper end of the plunger. A scraper ring is preferably employed ahead of the packing on the plunger to remove material adhering to the inside wall of the body.

In one embodiment the plunger upper head interferes with an extension from the valve seat to compress the seal ring.

3,804,366

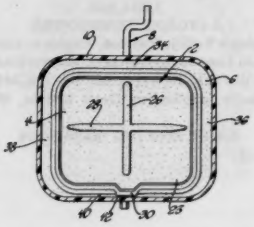
COMPOSITE FLOW CONTROL DEVICE

Phillip L. Rubright, Berkeley, Mich., assignor to Arco Industries Corporation, Detroit, Mich.

Filed June 5, 1972, Ser. No. 259,721

Int. Cl. F16k *1/18*

U.S. Cl. 251—305 **17 Claims**



A flow control device such as a valve, damper and the like for controlling flow through a duct or other flow passage and including a relatively rigid main body portion composed primarily of a first organic resin material and a sealing portion bonded to the main body portion and composed of an elastomeric material including a second organic resin. The bond between the sealing portion and main body portion is increased by mixing some of the second organic resin material with the first organic resin material. Mounting means in the form of a pivot rod is molded to the main body portion for pivotally supporting the device in a duct or the like. The device can be made by a method including steps of mixing the second organic resin in powdered form into a quantity of the first organic resin in liquid form and then pouring the mixture into a portion of a mold defining the configuration of the main body portion. Elastomeric material for the sealing portion is poured into the mold in liquid form and covers the surface of the mixture of the first organic resin and the powdered form of the second organic resin. The contents of the mold is then cured.

3,804,367

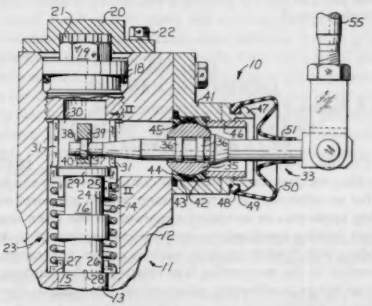
CONTROL LEVER AND MOUNTING MEANS THEREFOR

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 10, 1972, Ser. No. 270,043

Int. Cl. F16k *31/44*

U.S. Cl. 251—235 **7 Claims**



There is disclosed a control lever and linkage system for the actuation of hydraulic valves and the like that provides novel mounting means for the control levers which provide low

operator effort and improved sealing of the valve system. The supporting means for the operating level provides sealing means for the valve element itself and also provides for actuation of the valve by control forces exerted at an angle to the plane of the valve and lever.

3,804,368

RATCHET TENSIONERS

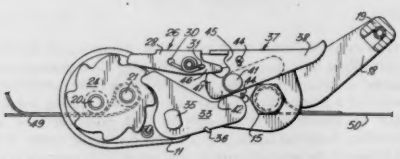
Peter John Dennis Bailey, Royston, England, assignor to Irvin Great Britain Limited, Letchworth, Hertfordshire, England

Filed Feb. 29, 1972, Ser. No. 230,243

Claims priority, application Great Britain, Mar. 4, 1971, 6033/71

Int. Cl. B66f 1/00; A63b 61/04

U.S. Cl. 254—51 **8 Claims**



A ratchet tensioner for tensioning for example webbing comprises a reciprocable lever mounting a first pawl engaging a ratchet wheel connected to two parallel bars forming a reel so that when the lever member is reciprocated, movement in one direction causes rotation of the ratchet wheel and reel so that webbing may be wound on the reel and thus tensioned. When the lever moves in the opposite direction, the first pawl rides over the ratchet wheel and a second pawl engages the ratchet wheel to prevent the webbing unwinding from the reel. When the lever is moved to a rest position at its limit of travel in the opposite direction, a release lever, spring-biassed towards an inoperative position, may be operated in accordance with the invention so as in one operative action to lift the pawls out of engagement with the ratchet wheel so that the reel is free to rotate and the tension in the webbing can be released. This is achieved by a projection at one end of the release lever acting on an end portion of the first pawl to lift the pawl out of engagement with the ratchet wheel. The first pawl acts on a rocker member disposed between the pawls and the rocker member in turn acts on an end portion of the second pawl to transmitt the movement of the first pawl to the second pawl to lift the second pawl out of engagement with the ratchet wheel.

3,804,369

JACKING MECHANISMS

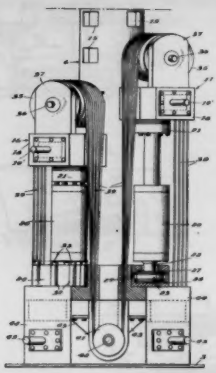
John R. Sutton, P.O. Box 32, Beaumont, Tex.

Filed Apr. 14, 1972, Ser. No. 244,038

Int. Cl. B66f 1/00; E02d 21/00

U.S. Cl. 254—105 **18 Claims**

Jacking mechanisms are used in connection with supporting legs for an offshore platform or barge which supports oil well drilling apparatus or servicing apparatus in the open sea. The present jacking mechanism combines the action of hydraulic cylinders with flexible devices, such as cables, for transmitting movement to the supporting legs relative to the offshore platform or barge in effecting substantially continuous but step-by-step rectilineur movement of the supporting legs. A pair of hydraulic cylinders or jacks are located symmetrically with respect to each of two or more chords of a leg or with respect to the leg, and act respectively for movement of a traveling head or heads that may be keyed step-by-step to the chord or chords of the leg. A substantially continuous jacking operation is accomplished by the engaged and disengaged pin ends of the respective cylinders together.



The chord of each leg is fabricated so as to utilize a heavy section, properly braced for the key connection with a jacking unit.

3,804,370

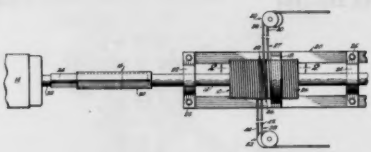
RECIPROCATING PULLEY DRUM CABLE DRIVE

Boyd Ray Woodard, 6995 N. W. 32nd Ave., Miami, Fla.

Filed Apr. 26, 1973, Ser. No. 354,899

Int. Cl. B66d 1/39, 1/36

U.S. Cl. 254—150 R **7 Claims**



A screw threaded reciprocating cable drive means comprised of an elongated, screw threaded pulley drum, fixed to a drive shaft, connected to a reversible motor means by a telescopic coupling. A nut, fixed relative to a frame, is carried on the screw threaded drum whereby reciprocating movement is imparted to the drum when the motor means is alternately energized in forward and reverse directions. Cable means engaged in the screw threads of the drum are driven thereby without traveling with the drum.

3,804,371

WINCH MECHANISMS

Noel Mills, and Geoffrey Peter Warley, both of Yeovil, England, assignors to Westland Aircraft Limited, Yeovil, England

Filed Mar. 6, 1972, Ser. No. 232,177

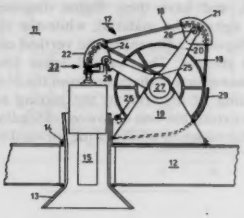
Claims priority, application Great Britain, Mar. 4, 1971, 5986/71

Int. Cl. B66d 1/38

U.S. Cl. 254—186 R **10 Claims**

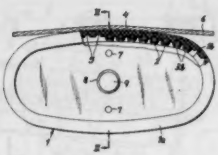
A winch mechanism is provided for installation in areas having a limited vertical dimension, and is of particular benefit in one application for installation in a helicopter cabin to control movement of a load through a hole in the cabin floor. The

mechanism includes a suspension means which is automatically moved between upper and lower positions during raising and lowering of the load. In one embodiment this movement is



accomplished in association with a moving shroud assembly which combines with a fixed shroud to encase the mechanism when the load is in a lowered position.

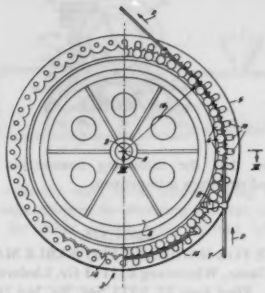
3,804,372
CABLE GUIDE
Franz Fuchs, Immenstadt/Allgau, Germany, assignor to Dr. Werner Rohrs KG, Sonthofen/Allgau, Germany
Filed Feb. 23, 1972, Ser. No. 228,501
Int. Cl. B66d *1/36*
U.S. Cl. 254—190 **7 Claims**



A guide for a moving cable or rope, e.g., on a ski tow, includes a generally elliptical track for an endless belt provided with roller pairs riding that track, or for a chain of separate or loosely interconnected roller-supported bodies. The axes of each roller pair may include an obtuse angle with each other, the track being then split into two halves formed with respective rails which are correspondingly inclined and whose mutual distance may be changed to vary the tension of the belt or chain of interconnected bodies.

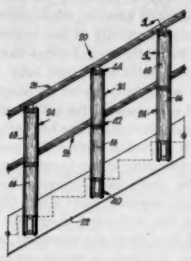
3,804,373
DEFLECTOR FOR CABLE TRANSPORT
Alfred Ross, Thun, Switzerland, assignor to Willi Habegger, Thun, Switzerland
Filed May 14, 1973, Ser. No. 360,182
Claims priority, application Germany, May 16, 1972, 2223729
Int. Cl. B66d *1/36*
U.S. Cl. 254—190 **10 Claims**

A deflector for a cable transport system, wherein the cable is provided with a plurality of members each supporting a load, has a wheel rotatable about an upright axis and provided around its periphery with a plurality of angularly equispaced guides. Each such guide is carried on one end of a short arm pivoted itself on the periphery of the wheel so that the guides can be pushed to the side by the load-carrying members as they pass. The guides are small synthetic-resin sheaves which are rotatable about respective axes on their respective arms. The arms normally project radially inwardly of the wheel. In the case of a system wherein the arc of the deflection is flatter



than the wheel curvature a cam is provided to array those guides in contact with the cable along the desired arc.

3,804,374
TWIN POST RAILING SYSTEM
Wenzel W. Thom, Wichita, Kans., assignor to Architectural Art Mfg., Inc., Wichita, Kans.
Filed Oct. 2, 1972, Ser. No. 294,259
Int. Cl. E04h *17/14*
U.S. Cl. 256—59 **2 Claims**

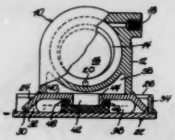


A handrail structure which has pairs of laterally spaced post members capable of being arranged to present a variety of eye-appealing appearances including a combination of wood and metal. Each pair of posts has vertically adjustable clamp mechanisms extending laterally therebetween and in gripping complemental engagement to rigidly hold the pair of posts in laterally spaced relationship and to define a space between the posts for receiving wood filler pieces. Both the posts and the clamp mechanisms are cut from extruded metal pieces for inexpensive manufacture. An offset handrail is angularly adjustably mountable upon one of the clamp mechanisms of each pair of posts.

3,804,375
AUTOMATIC AIR CLAMP FOR AIR-DRIVEN MACHINE
Carl G. Matson, Kewanee, Ill., assignor to Martin Engineering Company, Neponset, Ill.
Continuation-in-part of Ser. No. 251,329, May 8, 1972, abandoned. This application July 31, 1972, Ser. No. 276,765
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 R **17 Claims**

An air-driven machine, such as a rotary vibrator, is mountable on a structure by cooperative male and female parts and

an air-inflatable envelope is interposed between the parts to be inflated by the same air under pressure that drives the



machine so that the mounting connection between the machine and structure is improved.

3,804,376

DEVICE FOR HANDLING FLOWABLE MATERIALS

Heinrich Clasen, Wiesenweg 8, 3111 Gr. Liedern, Germany

Filed June 21, 1972, Ser. No. 264,792

Claims priority, application Germany, Nov. 26, 1970, 2058071

Int. Cl. B01f *15/02*

U.S. Cl. 259—4 **9 Claims**

The invention relates to a device for handling flowable material as fluids and/or powdery substance especially for mixing, homogenizing or kneding while the media are flowing. The device consists essentially of the hollow cylindrical tube and a plurality of helically wound sheet-like elements extending in series longitudinally within the tube. Each element extends to the tube walls throughout its length and divides the tube into different passageways for said fluid. In the device according to the present invention the helically wound sheet-like elements are each provided with a flat extension portion at least at one end extending in the longitudinal direction of the tube element. The sheet-like elements further comprise at least at one of their opposite ends a slot for intermesing with the proceeding or the following sheet-like element. The arrangement is such that there are provided, in the region of the intermeshing, four channels or passageways around the longitudinal axis of the tube element for the flow of fluid.

3,804,377

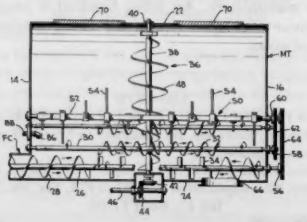
MIXING APPARATUS FOR FLUENT MATERIALS

John L. Kugle, Lancaster, and Robert C. Futty, Willow Street, both of Pa., assignors to IRL Daffin Associates, Incorporated, Lancaster, Pa.

Filed Nov. 2, 1971, Ser. No. 194,874

Int. Cl. B01f *7/08*

U.S. Cl. 259—6 **14 Claims**



Apparatus for mixing fluent materials such as livestock feed, comprising a mixing tank preferably mounted on a mobile self-propelled vehicle frame and having therein three parallel generally horizontal auger conveyors and a generally vertical auger conveyor. Two of the horizontal conveyors are disposed adjacent to each other in the lower portion of the tank, adjacent to and to one side of the lower end of the vertical conveyor, and have their flights disposed in opposite directions to agitate the material, while the third horizontal conveyor is disposed adjacent to the vertical conveyor on the opposite side thereof. The vertical auger conveyor has its spiral flights increasing in diameter from the bottom to the top thereof. Feeding of material to the mixing tank is accomplished by an extensible belt conveyor extending forwardly of the tank and terminating adjacent the forward end of the vehicle frame.

3,804,378

METHOD AND APPARATUS FOR PRODUCING AN EXPANDED POLYMER MATERIAL

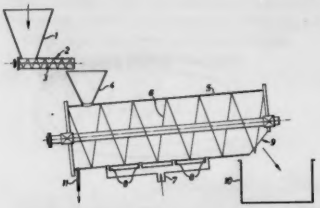
Neville Walls, Bury, and Peter Denzil Jones, Ormskirk, both of England, assignors to MacMillan Bloedel Containers Limited, Watford, Hertfordshire, England

Filed Dec. 16, 1971, Ser. No. 208,877

Claims priority, application Great Britain, Dec. 16, 1971, 59784/71

Int. Cl. B01f *7/08, 15/02*

U.S. Cl. 259—7 **8 Claims**



Apparatus for expanding a multiplicity of pieces of expandible polymer material wherein the pieces of unexpanded material are fed into a cylinder arranged at an angle to the horizontal and conveyed along the cylinder by a conveying screw the material being heated to cause expansion by steam or other heating fluid supplied to the cylinder by means for generating the steam or other heating fluid, the expanded material being discharged from the cylinder into a container means being provided for blowing compressed air into the container. The apparatus is formed as a unitary structure on a wheeled base so as to be transportable, the material if desired being recycled to effect a second expansion the material being subject to aeration during a period of dwell between the two stages of expansion.

3,804,379

DEVELOPING APPARATUS FOR PHOTOGRAPHIC MATERIALS

Werner Merz, Napoloenweg 3, D-7911 Oberelchingen, Germany

Filed Jan. 22, 1973, Ser. No. 325,893

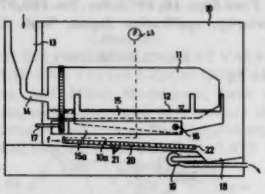
Claims priority, application Germany, Jan. 21, 1972, 2202877

Int. Cl. G03d *3/04*

U.S. Cl. 259—81 R **7 Claims**

A drum is rotatable about a horizontal longitudinal axis and adapted to contain a developer liquid and photographic materials which are to be developed by contact with this

liquid. A drive is provided for rotating the drum and for agitating the liquid therein, and a humidifying arrangement is provided for raising the level of humidity in the drum to a desired extent so as to prevent evaporation of the liquid in the drum.



3,804,380

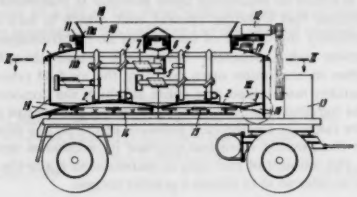
CONTAINER FOR TRANSPORT OF MASTIC ASPHALT AND LIKE BULK MATERIAL REQUIRED FOR LAYING STREETS

Wolfgang Beutler, Welterpfod 53, 1 Berlin 48, Germany

Filed June 13, 1972, Ser. No. 262,254

Int. Cl. B01f *7/20, 7/32;* **B28c** *5/46*

U.S. Cl. 259—157 **6 Claims**



The invention relates to containers for the transport of mastic asphalt or like bulk material required for laying streets. The container is provided with stirrer-means for preventing separation phenomena and comprises at least two part-containers each with part cylindrical walls joined together to define a container space, the axes of the part-cylinders coinciding with the axes of rotation of two stirrer-arm assemblies. The arms of the stirrer-arm assemblies move along paths which intersect in the transition zone in the container space where the interior of one part-container merges with the interior of the other.

3,804,381

SCREW-TYPE INJECTOR FOR MOLDING MACHINE

Bernd Friedrich Bielfeldt, Aidenried, and Richard Flohrs Richardsen, Seefeld, Oberalting, both of Germany, assignors to Krauss-Maffee Aktiengesellschaft, Munich-Allach, Germany

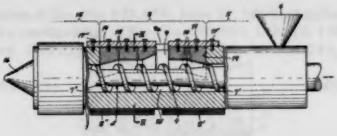
Filed Feb. 1, 1971, Ser. No. 111,442

Claims priority, application Germany, Feb. 4, 1970, 2005095

Int. Cl. B29f *1/02*

U.S. Cl. 259—191 **10 Claims**

A horizontally reciprocable plasticizing screw, whose turns define spaces of varying volume defining a low-pressure zone between two high-pressure zones, operates in an injection cylinder which is internally widened above the horizontal axial plane of the screw in an exhaust region coinciding with the low-pressure zone in the withdrawn position of the screw. The exhaust region, which is vented through an outlet at the top, is defined by a multiplicity of axially adjoining inwardly concave inserts received in a rectangular slot extending longitudinally in the upper cylinder wall, these inserts being removably secured to a supporting strip overlying the slot so as to be exchangeable for other inserts with cavities of different depths.



3,804,382

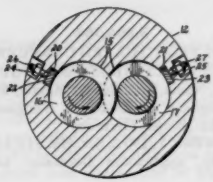
EXTRUDER CONSTRUCTION

Wallace W. Pultz, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed July 1, 1971, Ser. No. 158,724

Int. Cl. B01f *7/08*

U.S. Cl. 259—192 **9 Claims**



A twin screw extruder having a segmented barrel which includes a plurality of wear inserts positioned in the wall of the barrel at points of maximum wear. The inserts are flush with the inner surface of the barrel and are longitudinally positioned in at least one of the barrel segments at the points at which localized high wear would normally occur. The materials employed are preferably highly wear resistant metals having a high surface microhardness and the inserts can be replaced when necessary to thereby prolong the effective life of the barrel.

3,804,383

APPARATUS FOR INTRODUCING A MIST OF WATER INTO A GAS

Alfred Erich Wibrandt van Diepenbroek, Ermelo, Netherlands, assignor to Bronswerk-Apparatenbauw N.V. v/n Moring & Steenaart, Nijkert, Netherlands

Filed July 7, 1972, Ser. No. 269,583

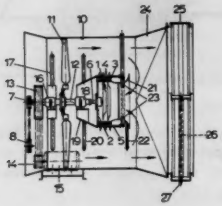
Claims priority, application Netherlands, July 9, 1971, 7109489

Int. Cl. B01f *3/04*

U.S. Cl. 261—30 **12 Claims**

An apparatus for introducing a mist of water into a gas, in particular into air, comprising a rotatably supported blade wheel including a plurality of blades carried by an end plate and a plurality of axially spaced rings with sharp outside edges attached to and projecting from the blades, perpendicular to the axis of rotation of the blade wheel and extending along the circumference of the same, driving means for the blade wheel, a stationary cage coaxial with the blade wheel and surrounding the blades, a gas inlet at the end of the blade wheel remote

from the end plate, and at least one water supply conduit discharging into the gas inlet, so that the gas drawn into the inlet leaves the blade wheel in humidified condition through the spaces between the rings. The blade wheel is spacedly ar-



ranged within a conduit section to which the gas to be treated is supplied by a ventilator, in such manner that a portion of the gas stream is drawn into the blade wheel and is humidified in the same, and that the humidified gas leaving the blade wheel is admixed to the gas stream flowing around the blade wheel.

3,804,384

SLEEVE VALVE-ACTUATED CARBURETOR FOR INTERNAL COMBUSTION ENGINES

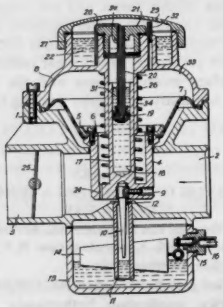
Karl-Heinz Zahr, Neuss, and Gunter Hartel, Rosellen, both of Germany, assignors to Deutsche Vergaser Gesellschaft m.b.H. & Co. KG, Neuss, Germany

Filed Dec. 1, 1972, Ser. No. 311,439

Claims priority, application Germany, Dec. 29, 1971, 2165305

Int. Cl. F02m *9/06*

U.S. Cl. 261—44 R **4 Claims**



A sleeve valve-actuated carburetor for internal combustion engines including a damping arrangement comprising an oil-filled conduit on the sleeve valve, a piston and piston rod extending into the conduit and including a passageway communicating with an oil supply chamber. The arrangement further includes a bent capillary tube connecting the oil supply chamber and interior of the piston rod for predetermined oil return flow so as to provide controlled damping of the carburetor operation.

3,804,385

SPARK IGNITION INTERNAL COMBUSTION ENGINE

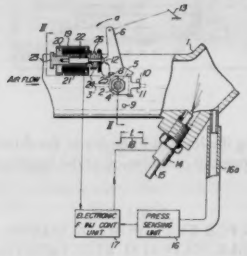
Toshi Suda, and Norio Omori, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan

Filed Sept. 16, 1971, Ser. No. 180,977

Claims priority, application Japan, Sept. 25, 1970, 45-84493

Int. Cl. F02d *5/00*

U.S. Cl. 261—51 **7 Claims**



An intake throttle valve operating member is rendered movable independently of an intake throttle valve, disposed in an intake pipe, after the intake throttle valve has reached its maximum open position while holding the throttle valve in said maximum open position, and the amount of movement of the throttle valve operating member after the throttle valve has reached its maximum open position is transmitted to an electronic fuel injection control, unit, which in turn controls electrically the degree of opening of an electromagnetic fuel injection valve, whereby before the intake throttle valve reaches its maximum open position, the air fuel ratio can be adjustably maintained at a value at which the concentrations of the harmful components in the exhaust gas are low over the entire range of the internal pressure of the intake pipe, while after the throttle valve has reached its maximum open position, the amount of fuel only is increased to make the air fuel ratio smaller so as to obtain a greater torque.

3,804,386

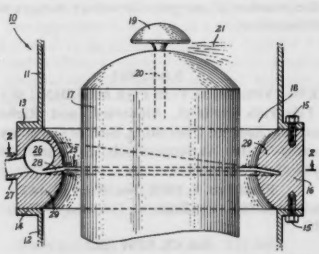
SPRAY MANIFOLD

Orlan M. Arnold, Grosse Pointe Park, Mich., and Michael F. Horn, Stamford, Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,945

Int. Cl. B01f *3/04*

U.S. Cl. 261—71 **9 Claims**



A spray manifold, particularly for the inside of an annular vessel, having an annular liquid passage and having in its inner peripheral wall an annular slot forming a spray opening through which an inwardly directed radial spray is ejected around its entire periphery. The annular passage may be

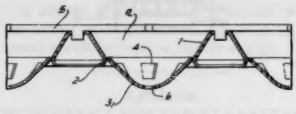
tapered in section to compensate for the liquid flow. The manifold may be adjustable along the vessel walls by means of a telescoping inlet pipe. Reverse flow is provided for flushing out the annular passage.

3,804,387

TRAY WITH SELF-GUIDING TARGET VALVES FOR GAS-LIQUID AND VAPOR-LIQUID CONTACTING

Adrian Brinzei, and Mihai Mezincescu, both of Ploiesti, Romania, assignors to Institutul de Cercetare si Proiectare Tehnologica Pentru Prelucrarea Titeiului, Ploiesti, Romania

Filed Feb. 25, 1972, Ser. No. 229,470
Int. Cl. B01f 3/04
U.S. Cl. 261—79 A **6 Claims**



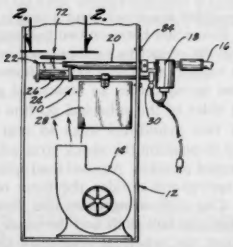
A tray for a liquid-gas contactor comprising a plurality of openings formed with downwardly and inwardly converging aprons and respective downwardly converging valves received within the aprons and formed with gas-guiding slits. The valves are movable vertically within the distance determined by the engagement of a lift of the valve with the apron and radially extending members at the upper end of the vertical motion.

3,804,388

HUMIDIFIER

Francis A. Jamell, 805 S. 11th Ave., Marshalltown, Iowa

Filed Apr. 17, 1972, Ser. No. 244,380
Int. Cl. B01f 3/04
U.S. Cl. 261—89 **6 Claims**



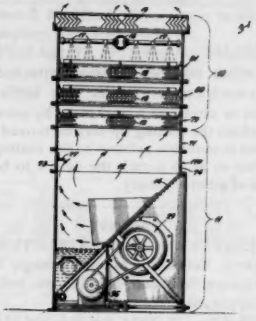
A humidifier for injecting fluid into a moving stream of gas comprises a spray head having at least one spray aperture and having a feed conduit for introducing fluid under pressure to the spray aperture, a cleaning member sized to fit within the spray aperture, and mechanism connected to the cleaning member for selectively moving it from a first position wherein it protrudes within the spray aperture to a second position wherein it is withdrawn from the spray aperture so that the cleaning member will clear the spray aperture of any obstructions therein. A freewheeling fan is mounted over the spray aperture and is adapted to rotate in response to the flow of gas past the spray head. Rotation of the wheel deflects and facilitates vaporization of the stream of fluid exiting from the spray head.

3,804,389

WET DECK FILL SECTION

John Engalitcheff, Jr., Gibson Island; Thomas F. Facius, Baltimore, and Wilson E. Bradley, Jr., Ellicott City, all of Md., assignors to Baltimore Aircoil Company, Inc., Baltimore, Md.

Continuation of Ser. No. 838,014, June 17, 1969, abandoned, which is a continuation of Ser. No. 706,004, Feb. 16, 1968, abandoned. This application Apr. 19, 1972, Ser. No. 245,423
Int. Cl. B01f 3/04
U.S. Cl. 261—111 **2 Claims**



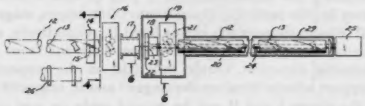
A wet deck fill unit for an evaporative cooler to present a large surface for the evaporation of heat from water gravitating over the surface. Each unit has a plurality of parallel spaced apart fill pieces, each piece having vertically extended margin portions connected by a curved central portion. There is a horizontally extending open zone having a height equal to at least one-half the height of the fill pieces between adjacent fill units to increase even distribution of water over the fill pieces below it.

3,804,390

APPARATUS AND METHOD FOR HEAT-TREATING LARGE DIAMETER STEEL PIPE

Reuel E. Jennings, Warren; Louis J. Moliterno, Girard, and Clifford L. Amend, Youngstown, all of Ohio, assignors to Ajax Magnethermic Corporation, Warren, Ohio

Filed Sept. 8, 1971, Ser. No. 178,737
Int. Cl. C21d 1/66
U.S. Cl. 266—4 E **10 Claims**



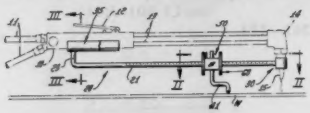
There is disclosed herein apparatus and method for heat-treating large diameter steel pipe. The apparatus comprises an induction heating coil and internal-external quenching system axially closely spaced and disposed in alignment with and between two radial restraining roll stands which firmly grip relatively cold portions of the pipe preceding and following the part of the pipe being heated and quenched. Means are disclosed for preheating the weld bead portion whereby overall uniform heating of the pipe is attained from the induction heating coil.

3,804,391

CUTTING TORCH GUIDE ATTACHMENT

William R. Case, Long Beach, Calif., assignor to June L. Alexander, Phoenix, Ariz., a part interest

Filed Oct. 4, 1972, Ser. No. 294,765
Int. Cl. B23k 5/00; B43i 9/00
U.S. Cl. 266—23 L **10 Claims**



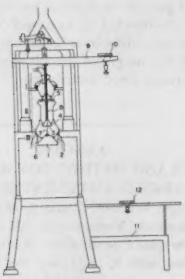
A device which may be releasably attached to a hand-operated oxy-acetylene or similar type torch to facilitate cutting of arcs or circles in a workpiece by providing a pivot point about which the cutting tip may be moved and in which the pivot point is movable relative to the cutting tip with extreme precision so as to permit the device to be used to cut holes in metal of great accuracy.

3,804,392

BLAST FURNACE TOP STRUCTURE

Naoto Kishikawa, Nakahara; Minoru Kosugi, Tokuriki, and Youichi Iwamaru, Nakahon, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 20, 1971, Ser. No. 209,556
Claims priority, application Japan, Dec. 21, 1970, 45-127688
Int. Cl. C21b 7/18
U.S. Cl. 266—31 **3 Claims**



An improvement in a blast furnace top structure designed for facilitating the replacement of a part of said structure, which may be, for instance, divided into three stages, stages I, II and III. Floors support the stages I and II, respectively, said floors being elongated in the direction different from the crane running direction. Guide rails laid on the respective floors support wheels fitted on the stages I and II, respectively, so that the stages I and II can be moved aside on said rails, whereby the stage III can be easily replaced without need of moving the stages I and II down onto the ground.

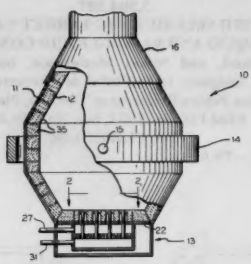
3,804,393

STEEL CONVERSION APPARATUS

Harvey W. Maurice, Butler, and Alexander T. Dortenzo, Pittsburgh, both of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 170,147
Int. Cl. C21c 5/48
U.S. Cl. 266—35 **10 Claims**

An open topped vessel for converting molten ferrous metal to steel is pivotable about a horizontal axis and has bottom tuyeres which permit the blowing of oxygen and other gases upwardly through the molten metal. The tuyeres are arranged



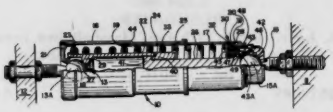
in an integral refractory plug which may rapidly be mounted in the vessel bottom during vessel relining.

3,804,394

SHOCK STRUT

Armen H. Sivaslian, Newport Beach, Calif., assignor to North American Rockwell Corporation

Filed May 30, 1972, Ser. No. 257,503
Int. Cl. F16f 5/00
U.S. Cl. 267—34 **5 Claims**



The present invention is a shock strut which is particularly adapted to being connected between two ball shafts, one ball shaft connected to the object to be supported and the other connected to the support such as a vehicle frame. At rest, a single compression spring forces an associated pair of seats against opposing sides of the spherical portion of each ball shaft and forces two cylindrical links to seat together in order to precisely re-position the shock strut with respect to an initial preseclected position. A novel load splitter contacts one end of the spring and divides the force of the spring along two paths. One path compresses one seat against the spherical portion of one ball shaft and the other compresses another seat against the spherical portion of the other ball shaft as well as causing the two cylindrical links to seat together.

3,804,395

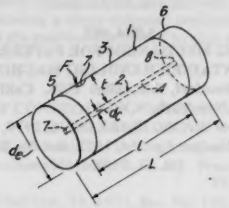
PRESSURIZED RUBBER FOR ABSORBING IMPACT ENERGY

John G. Muller, P.O. 7817 Calpurnia Ct., McLean, Va.

Continuation-in-part of Ser. No. 111,534, Feb. 1, 1971. This application Dec. 29, 1971, Ser. No. 213,625
Int. Cl. F16g 7/12
U.S. Cl. 267—140 **12 Claims**

A mass of an elastic or plastic material or other deformable material is used to cushion and absorb the energy of impact when one rigid body strikes another, the mass of deformable material having at least one liquid filled leakproof interior cavity traversing substantially all of the mass. The mass is in-

terposed between the impacting bodies and may be affixed to one or the other. The crushing effect of the impact pressurizes the liquid thereby causing the material to be stressed and



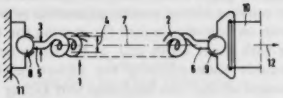
deformed as energy is absorbed. A reservoir may be fixed between impacting bodies and be connected by tubing to a pressure vessel which expands to absorb energy.

3,804,396

SECURING DEVICE FOR VEHICLE SAFETY BELTS

Rolf Seybold, Erichenstrasse 21, Solingen, Germany

Filed July 24, 1972, Ser. No. 274,287
Int. Cl. F16f *1/06*
U.S. Cl. 267—166 **6 Claims**



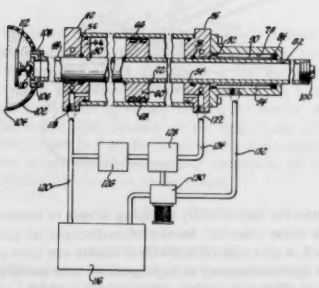
A securing device for vehicle safety belts is provided by a helically coiled body made from plastically deformable wire arranged so that the ratio of the average diameter of the helical coils to the diameter of the wire is not greater than 3.5.

3,804,397

AUTOMATIC POSITIONING VACUUM CUP

Don B. Neumann, Ann Arbor, Mich., assignor to GCO, Inc., Ann Arbor, Mich.

Filed Aug. 19, 1971, Ser. No. 173,273
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **9 Claims**



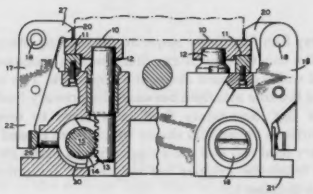
A pneumatically powered fixture for engaging and holding workpieces while inspection operations are performed on them includes a vacuum cup supported on the end of a cylinder rod. An air passage through the rod connects to the cylinder area behind the piston. When air is evacuated from a pair of passages through the cylinder, disposed on opposite sides of the piston, the cylinder rod moves outwardly since the rear chamber is connected to atmosphere through the open vacuum cup. When the vacuum cup engages a workpiece and locks against it, the area to the rear of the piston is no longer vented to atmosphere and the pressure on both sides of the piston equalize, terminating motion of the rod. Brake means operating on the rear end of the piston rod then lock the rod against motion.

3,804,398

PALLET CLAMP

Stephen A. Bonzi, Rockford, Ill., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,568
Int. Cl. B25b *1/08*
U.S. Cl. 269—218 **2 Claims**



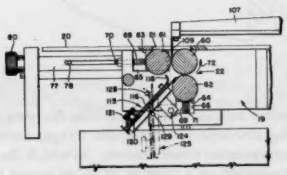
A device for use in the simultaneous and precise activation of a clamp having a jaw and a pin, both of which will simultaneously secure, position and align a pallet relative to a working station of a transfer line.

3,804,399

AUXILIARY FOLDER

William C. Rupp, Parma, Ohio, assignor to The Chandler & Price Company, Cleveland, Ohio

Filed July 16, 1971, Ser. No. 163,284
Int. Cl. B65b *45/12*
U.S. Cl. 270—62 **11 Claims**



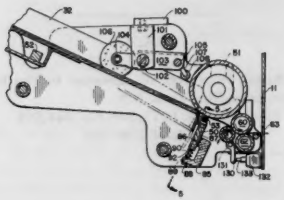
An auxiliary folder for a web press comprising a carriage adjustable transversely across a path of paper, the carriage including a roll assembly, the axis of the rolls extending parallel to the path of paper, a stop at one end of the assembly, a folding blade driven in synchronism with the movement of paper, such blade causing the paper held by the stop to be folded and driven into the roll assembly, and a buckle chute which may be positioned to receive the paper thus folded, the adjustment of the carriage permitting the production of a wide variety of products such as, a 6 × 9 fold from a 9 × 12 fold, a fold with a lip on either side for collating, an accordian fold or a letter fold.

3,804,400

X-RAY FILM FEED METHOD AND APPARATUS

Robert P. Hunt, South Euclid, and Michael Hura, Wickliffe, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Mar. 16, 1972, Ser. No. 235,052
Int. Cl. B65h *3/06*
U.S. Cl. 271—10 **22 Claims**



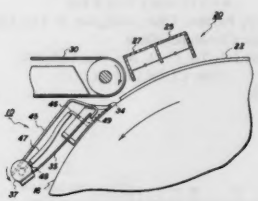
An X-ray film feeder for sequentially feeding sheets from a stack of film sheets of cut X-ray film into film processor. A primary feed roll is disposed above the film stack. The top sheets of film are fed one at a time between the primary feed roll and a stripper bar. Secondary feed rolls serve to downwardly deflect portions of the film sheets which have passed between the primary feed roll and the stripper bar to bias a sheet being fed away from the stripper bar to prevent scratching of the film by the stripper bar.

3,804,401

PNEUMATIC STRIPPING APPARATUS

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1972, Ser. No. 302,364
Int. Cl. B65h *29/56*
U.S. Cl. 271—80 **6 Claims**



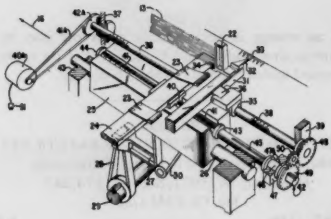
This invention relates to an apparatus for stripping copy sheets bearing developed electrostatic images from the surface of a photoreceptor drum member, in which the stripping member is supported on a cushion of air so as not to contact the drum surface during the stripping operation. A stripping member is formed with a wedge portion member positioned adjacent to the drum surface to affect stripping of the paper from the drum surface. A stripping member is formed with a plenum channel with the bottom thereof, and is in communication with a source of air that effects an air cushion formed between a stripping member and a drum surface. Air channels are formed at the leading edge of the stripping member to direct air in the vicinity of the leading edge of the copy sheet to facilitate lifting of the copy sheet off the drum surface. In another embodiment, air channels are formed in the face of the wedge portion to assist in separating the copy sheet from the drum surface after it has been initially stripped. The stripping member is loaded against the photoreceptor drum member by a gimbal spring which allows the stripping member to maintain a constant relationship to the photoreceptor under conditions of runout or eccentricity of the photoreceptor while operating under dynamic conditions.

3,804,402

FEEDING MECHANISM FOR PAPERBOARD CONTAINER HANDLING MACHINE

William J. Hottendorf, Los Altos Hills, Calif., assignor to Ametek, Inc., New York, N.Y.

Continuation of Ser. No. 78,483, Oct. 6, 1970, abandoned.
This application Apr. 14, 1972, Ser. No. 244,224
Int. Cl. B65h *5/16*
U.S. Cl. 271—139 **3 Claims**



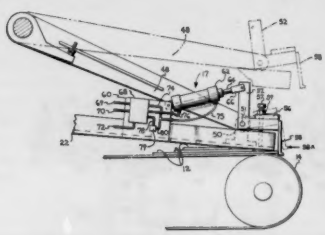
An adjustable paperboard sheet hopper backstop means and a sheet moving kicker means adjustable relative to said backstop with an adjusting means for moving the backstop in accordance with sheet width and, at the same time, moving the reciprocable slide carrying the kicker relative to the backstop means so that the backstop and kicker can be adjusted while the machine is being operated and without use of tools.

3,804,403

APPARATUS FOR STOPPING THE FLOW OF SHEETS OF MATERIAL

Thomas E. Vogt, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 4, 1972, Ser. No. 311,477
Int. Cl. B65h *5/24, 9/14*
U.S. Cl. 271—182 **12 Claims**



Apparatus for individually stopping sheets of material flowing into a sheet stacker. In the manufacture of corrugated paperboard, a plurality of individual sheets are conveyed side by side in an overlapping shingle pattern to a bundle stacker for removal. When bundles are completed, brake members engage the sheets to increase the overlapping of the shingle pattern to allow accumulation of sheets while the bundles are removed. Individualized gates mounted on the brake members stop the flow of sheets. The gates take the form of pivotally mounted finger members operated by a fluid motor. The

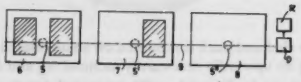
finger members are pivoted into a sheet stopping position by the fluid motor when the brake members engage the sheets. The fluid motor is controlled by the cycling of the bundle stacker. Additionally, some of the gates may be provided with a biasing control system which will prevent the finger members from assuming a sheet stopping position when no sheets are present at the position controlled by that particular gate.

3,804,404

METHOD OF CONTROLLING OPERATIONS OF A BOOK BINDING MACHINE

Fritz Bosshard, Kaltenbach, Switzerland, assignor to Martini Buchbindereimaschinenfabrik A.G., Frauenfeld, Switzerland

Filed Dec. 13, 1971, Ser. No. 190,454
Int. Cl. B65h 7/02
U.S. Cl. 271—57 **3 Claims**



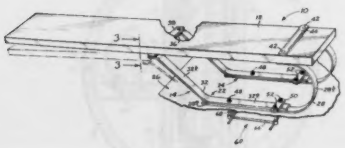
A series of printed sheet, which together constitute a book-block segment are advanced in a predetermined path. The sheets are scanned for a triggering characteristic which is present only once in the series, and upon detection of this characteristic a control signal is originated.

3,804,405

SPRING BOARD ASSEMBLY

Donald W. Giddings, Lake Oswego, Oreg., assignor to S. R. Smith Co., Inc., Canby, Oreg.

Continuation of Ser. No. 163,931, July 19, 1971, abandoned.
This application Jan. 15, 1973, Ser. No. 323,414
Int. Cl. A63b 5/10
U.S. Cl. 272—66 **3 Claims**



A spring board assembly including an elongated, substantially horizontal board and an underlying spring base for the board. The base includes a J-shaped rear leaf spring secured to the rear end of the board and a front leaf spring having a forward portion inclined upwardly toward the board: A midportion of the board rests loosely on the upper end of the front spring. The upper end of the front spring is permitted sliding movement longitudinally along the underside of the board when deflected by a weight on the board.

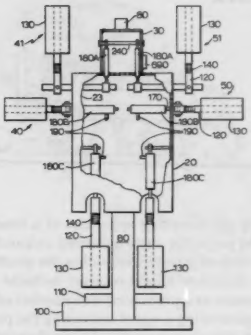
3,804,406

KARATE FIGHTER

Eugene G. Viscione, 21 Franklin St., Somerville, N.J.

Filed June 19, 1972, Ser. No. 264,389
Int. Cl. A63b 69/00
U.S. Cl. 272—76 **7 Claims**

The invention comprises a mechanical man having two pairs of separately movable arms and one pair of separately movable legs which are constructed to carry out karate moves. The mechanical man includes electronic circuit apparatus for controlling the operation, and sequencing of the operation, of each of the arms and legs, whereby any given one of the arms or legs may be made to perform a certain characteristic motion when energized by the circuit apparatus, which can be



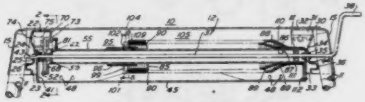
followed in automatic sequence by the energization of another given one of the arms or legs. The circuit apparatus provides for energization of one arm or leg at any given time. The body of the man also includes padded disks mounted about the surface thereof representing sensitive pressure points which serve as targets for the user of the apparatus.

3,804,407

MOTOR DRIVEN CRADLES AND THE LIKE

David Saint, Elverson, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.

Filed Jan. 4, 1973, Ser. No. 320,879
Int. Cl. A63g 9/16
U.S. Cl. 272—86 **8 Claims**



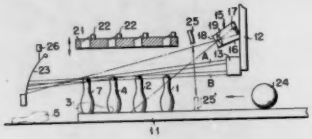
A motor driven cradle or swing is provided in which a spring construction is employed which permits of extended operation without rewinding. The spring is a composite spring composed of nested inner and outer spring sections, the inner spring section being connected at one end to a driving shaft on which a ratchet wheel forming part of an escapement is secured and to which an oscillating frame is pivotally supported, the other end of the inner spring section being coupled through a coupling or spring section connector to one end of the outer spring section, the other end of the outer spring section being connected to the oscillating frame. The outside spring end connection remote from the coupling is shaped to provide a slip-clutch action.

3,804,408

REMAINING PIN DETECTING APPARATUS OF A BOWLING MACHINE

Takao Saito, Kawasaki; Toshimitsu Kataoka, Tokyo, and Siro Yamawaki, Kanagawa, all of Japan, assignors to Anritsu Electric Co., Ltd., Tokyo, Japan

Filed Sept. 14, 1972, Ser. No. 288,923
Claims priority, application Japan, Jan. 31, 1972, 47-11152
Int. Cl. A63d *5/04*
U.S. Cl. 273—54 E **13 Claims**



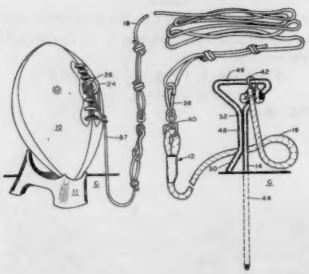
A remaining pin detecting apparatus of a bowling machine wherein a light projector casts a desired colored light at least on the upper ends of pins placed within the predetermined region on a pin deck; and a light receiver includes as many light receiving elements as a predetermined number of pins, each of the elements generating a signal indicating the presence of the corresponding pin upon receipt of a predetermined colored light reflected from the upper end of the pin so as to automatically count the scores of bowling games. The light projector includes at least one lens to form at least one parallel beam of the colored light. The beam is received and reflected by at least one mirror which is rotated during a pin detecting cycle to deflect the beam across the predetermined region.

3,804,409

KICKING PRACTICE AID

Dennis W. Schachner, 304 Waterman, Prospect Heights, Ill.

Filed Mar. 26, 1971, Ser. No. 128,450
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 B **1 Claim**



An apparatus for football kicking practice comprises an elastic cord and a non-elastic cord, the non-elastic cord being secured to attaching means on the football and the elastic cord being secured to a stake or other means for retaining the cord so that the ball will return to the kicker when the football is kicked.

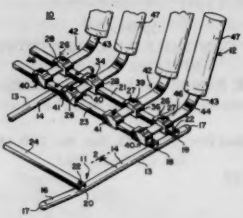
3,804,410

FOOTBALL TRAINING SLED

Martin J. Gilman, Gilman, Conn.

Filed Aug. 5, 1971, Ser. No. 169,206
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 R **3 Claims**

An adjustable football training sled includes transversely spaced parallel runners joined by a pair of longitudinally spaced rear cross bars and a front cross bar bolted to the tops of the runners. Rectangular tubular clamp members slideably engage each of the rear cross bars and are provided with hand-screw tightened clamp plates. Blocking dummies are spaced along the sled and each is mounted on an angulated leaf spring including an upwardly rearwardly inclined leg and a forwardly directed leg which is releasably clamped between the rear cross bars and respective clamp plates and is transversely adjustable.

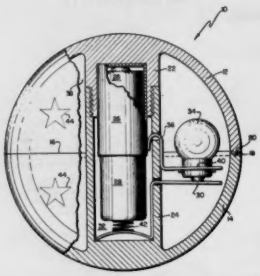


3,804,411

BALL HAVING INTERNAL LIGHTING SYSTEM

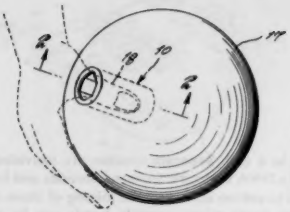
Robert S. Hendry, 19 Hillside Ave., North Haledon, N.J.

Filed Feb. 5, 1973, Ser. No. 329,732
Int. Cl. A63b *71/02*
U.S. Cl. 273—58 G **3 Claims**



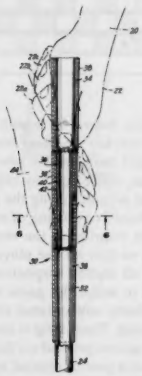
This invention pertains to an educational toy called a comet ball which may be utilized in many games involving both skill and chance. The comet ball comprises a plastic ball having a source of interior illumination and having designed on its surface small areas through which light shines brightly. These areas are designed in patterns representing constellations of celestial bodies. The remaining surface of the comet ball may be of different colors of plastic having some light permeability. Games utilizing the comet ball may be based upon the astronomical models incorporated in the ball or the illuminated colors of a set of comet balls. The ball is formed of two hemisphere secured together. A hollow cylindrical tube is attached internally to each of the sphere. The tubes are threaded and can be screwed together to tightly secure the hemispheres. Inside the tube is placed a battery which supplies power to light a bulb also located interiorly of the sphere.

3,804,412
TAPER LOCK INSERTS FOR THUMB AND FINGERS IN BOWLING BALLS
John Chetirko, 43-35 Union St., Flushing, N.Y.
Filed July 5, 1973, Ser. No. 376,797
Int. Cl. A63b 37/00
U.S. Cl. 273—63 A **4 Claims**



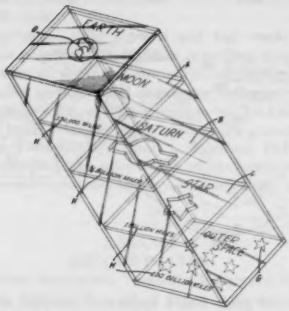
An insert for installation within a bowling ball and which has a particularly designed hexagonal opening for loosely receiving a thumb, and wherein the lower or nail portion of the opening depresses and locks the thumb evenly on five sides of the opening, the insert extending radially, and the end thereof being flush with the face of the ball.

3,804,413
GOLF CLUB
Andrew N. Hrivnak, 58 Ball Ave., Yonkers, N.Y.
Filed Mar. 20, 1973, Ser. No. 343,000
Int. Cl. A63b 53/14
U.S. Cl. 273—81 C **6 Claims**



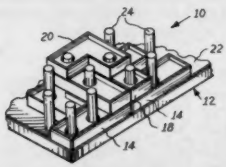
A golf club structure which enables the practice of the "square-to-square" method of swinging a golf club. The structure includes a golf club handle having an indented middle handle portion onto which is fitted a rotatable sleeve. The sleeve fits snugly into the indentation and by the use of resin or another lubricant between the sleeve and the handle, a golf club handle is constructed to allow one of the golfer's hands to rotate slightly during the backswing and to accurately rotate in the opposite direction during the downswing so that the club face is effectively mechanically positioned upon impact identically with its position at the start of the backswing.

3,804,414
AMUSEMENT AND EDUCATIONAL DEVICE THAT HAS A SPACE-AGE THEME
James Lloyd Taylor, 626 N.E. 109 Ct., Portland, Oreg.
Filed Oct. 5, 1972, Ser. No. 274,045
Int. Cl. G09b 1/00; A63f 9/00
U.S. Cl. 273—113 **1 Claim**



This invention consists of a closed transparent parallelepiped with three separate shelf-like members interiorly positioned equidistantly, each shelf having a cut-out — one round cut-out to represent the moon, one cut-out is round with rectangular extensions to two opposite sides to resemble Saturn and the other is a star-shaped cut-out, and a plug shaped to resemble a space satellite. The plug is so shaped and proportioned that when manipulated upon its proper axes it will pass through the cut-outs in the three shelf-like partitions. The space-age theme is further embodied in this device by inscriptions that indicate distances of heavenly bodies from the planet earth. Simulation of space travel is accomplished by manipulation of the device so that the plug, which is inserted in the "earth" end of the parallelepiped when assembled, passes from the "earth" end to the "outer space" end and back to "earth".

3,804,415
GAME BOARD AND GAME PIECES POSITIONABLE UPON THE BOARD IN A LIMITED NUMBER OF POSITIONS
Stephen A. Ryan, 1736 Sherman Pl., No. 3, Long Beach, Calif.
Filed Nov. 24, 1972, Ser. No. 308,983
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R **8 Claims**



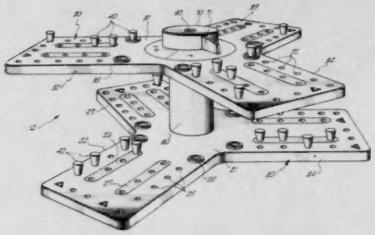
A game board has a pattern of locations of significant character, such as pegs, and game pieces have locations of significant character, such as openings to receive the pegs. The pieces are arranged so that they can be laid on the board on the pegs, with the game objective for the first player to position a plurality of pieces in adjoining relationship from one side of the board to the other. Another player has the same objective, with different pieces and different sides of the board. Pegs and pieces are arranged so that the pieces can be positioned on top of other pieces, such as three high on the pegs.

3,804,416

TWO LEVEL GAME BOARD APPARATUS

Lawrence T. Jones, Pacific Palisades, and Anson Sims, Redondo Beach, both of Calif., assignors to California R & D Center, Palisades, Calif.

Filed Mar. 27, 1972, Ser. No. 238,372
Int. Cl. A63f 3/00
U.S. Cl. 273—134 D **9 Claims**



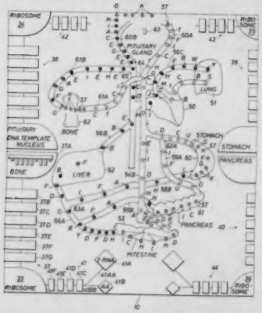
A two level game board apparatus, adapted to be played with playing pieces, comprises a first game board having a column mounted thereon for rotatively supporting a second game board. Each board includes a group of indicated areas adapted to receive the playing pieces. Each group of indicated areas extending about the periphery of the respective boards constitute portions of a path or course. A number of indicated areas on each path portion are designated so as to constitute a distinguishable group to enable the playing pieces landing on designated areas of the path portions of one board to move to designated areas of the path portions of the other board. During play, the second game board is rotatable with respect to the first game board in order to constantly change the angular relationship of the second game board with respect to the first game board. In this manner, the routes taken between board levels are constantly changing.

3,804,417

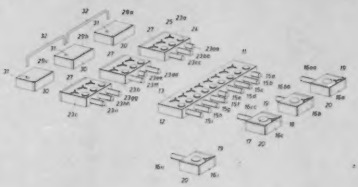
PROTEIN SYNTHESIS GAME

Rosette D. Dawson, 1015 Whitestone, Houston, Tex.

Filed Apr. 23, 1973, Ser. No. 353,741
Int. Cl. A63f 3/00
U.S. Cl. 273—134 AE **10 Claims**



Game apparatus for instruction of the principles of protein synthesis involving a game board with representation of a blood circulatory system including the body organs of lungs, intestines, heart and liver and separate components representative of cells for the stomach, the pancreas, the bone marrow, and the pituitary gland. Movement from location to location about the system is from one cell component through the above body organs and return. Instructions at the locations provide for selection of game pieces representative of nucleotides, T-RNA's, amino acids and peptide bonds. Amino acid game pieces are selected at the intestine organ and playable



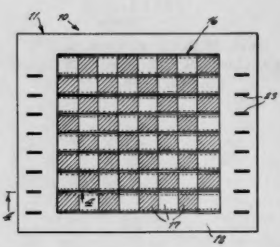
upon return to a cell. Separate courses are provided for the formation of a DNA molecule from nucleotides and binding of T-RNA units to amino acids and the joining of these elements at a ribosome space where peptide bonds can be joined to amino acids. The game pieces are coded to represent the various chemical components necessary for protein synthesis.

3,804,418

MOVABLE GAME BOARD

Charles Sander, 43 Betsy Dr., West Sayville, N.Y.

Filed June 15, 1972, Ser. No. 263,220
Int. Cl. A63f 3/02
U.S. Cl. 273—136 R **1 Claim**



An improved game board in which the playing field is similar to that of a checker or chess board with diagonal arrangement of light and dark spaces which may consist either of squares, rectangles, circles or any other shape upon which playing pieces can be moved during the progress of the game; the improved game board consisting of strips on each of which one row of spaces is imprinted, the strips being movable in either end direction so that all the playing pieces on the particular row are thus all shifted respective to the remainder of the playing field, so to make the game more challenging and interesting by a suddenly new created circumstances between the game playing pieces. Each strip is formed from an endless belt with the row of spaces printed on the outside thereof. The belt is rotatable about a pair of spaced apart rollers supported on shafs within a housing. The top wall of the housing has a pair of slots through which the belt passes so that a portion of the belt rests upon an upper surface of the top wall while the remainder of the belt is with the housing.

3,804,419

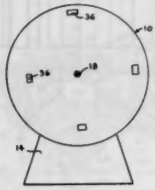
VOCABULARY GAME DEVICE

Walter D. Jackson, 405 Parkside, Valparaiso, Ind.

Filed Feb. 22, 1973, Ser. No. 334,903
Int. Cl. A63f 5/04
U.S. Cl. 273—142 HA **3 Claims**

A vocabulary game device having a stationary disc inscribed with spaces in radial and concentric rows. Prefixes, suffixes

and roots of words are inscribed in said spaces. Rotatively supported on the stationary disc is an intermediate disc having a plurality of openings which are radially spaced to expose inscribed spaces on the stationary disc, and angularly offset to provide a series of diagonally arranged openings over the radial row of inscribed spaces of the stationary disc. A top cover disc is further provided having a plurality of openings angularly spaced therearound at angles which are the quotient of the number of concentric rows of inscribed spaces divided into 360°; and each thereof being radially disposed from the center to one of the radial spaces of the stationary disc. The game device structure according to my invention allows the provision of numerous inscriptions which are the subject matter of the game and means for selecting only one of the inscriptions with a very low probability of repeat selection.



3,804,420

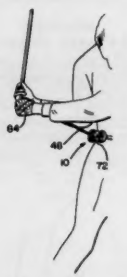
GOLFER'S TRAINING DEVICE

Stan Lee Boyd, 37A Maple Ave., Armonk, N.Y.

Filed Jan. 9, 1973, Ser. No. 322,222

Int. Cl. A63b *69/36*

U.S. Cl. 273—183 B **9 Claims**



The device comprises a cord reel, and a length of cord for wound storage of the cord on the reel and for paying-out of the cord from the reel, and a spring operative normally to cause a storage of the cord on the reel. The pay-out end of the cord is adjustably attached to a finger-less glove to be worn on the hand of the leading arm of the golfer, and the reel is rotatably supported in a housing which has means for engaging the golfer's belt. A release plate carried externally on the housing has a housing-penetrating dowel pin which is used to disengage a reel-engaging latch, the latch being borne internally of the housing and being operative to hold the reel in its cord payed-out disposition. Before the cord can be rewound, the release plate must be actuated by the golfer's elbow prior to beginning the downswing of a golf club.

3,804,421

SOLID MOLDED GOLF BALL

Anthony Alex, Akron, Ohio, and Thomas Zawadzki, Princeton, N.J., assignors to Alex Incorporated, Akron, Ohio

Continuation-in-part of Ser. No. 67,802, Aug. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 35,237, May 6, 1970, abandoned. This application June 23, 1972, Ser. No. 265,497

Int. Cl. A63b *37/00*; **C08c** *11/04*; **C08d** *3/08*

U.S. Cl. 273—218 **17 Claims**

A homogeneous, solid molded golf ball made from the elastomer cis polybutadiene rubber and containing not more than 15 percent by weight of a cross-linking monomer such as pentaerythritol tetraacrylate under the influence of a free radical initiator such as the peroxide bis (α-t-butylperoxyisopropyl) benzene and in the presence of a monofunctional monomer as a reactive plasticizer is disclosed. The composition optionally includes a co-agent in conjunction with the monofunctional monomer, an impact modifier and an acid acceptor.

3,804,422

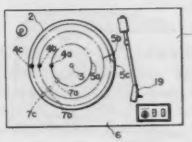
RECORD PLAYER

Rikiya Kobashi, Amagasaki; Tomohiko Nakamura, Osaka, and Mikio Itoi, Nishinomiya, all of Japan, assignors to Onkyo Kabushiki Kaisha, Osaka-shi, Japan

Filed Apr. 10, 1972, Ser. No. 242,339

Int. Cl. G11b *3/60, 3/08*

U.S. Cl. 274—15 R **2 Claims**



A record player with function of automatically setting the pickup to the proper starting place corresponding to the record size, so that the needle is put on the play-starting portion of the record groove as defined by the record size. A plurality of record size sensing rods are mounted on the turntable and, corresponding to the size of the record put on the turntable, different number of the sensing rods are depressed down. Logic circuit actuates the pickup to the proper starting position, corresponding to which sensing rods are depressed.

3,804,423

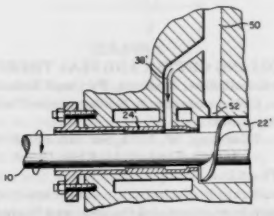
SHAFT SEAL THROTTLE BUSHING

Max Lorenz Booy, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1971, Ser. No. 199,272

Int. Cl. F16j *15/40*

U.S. Cl. 277—1 **4 Claims**



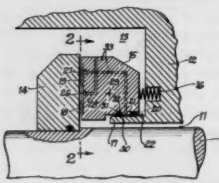
Method and apparatus for sealing a rotating drive shaft that enters a vessel for processing viscous material includes the

steps of feeding a portion of the supply stream of viscous material into the vessel in one direction through a space formed between a bore in the vessel and the shaft while allowing a smaller portion of the material to flow through the space in the opposite direction to atmosphere as leakage. The processing equipment comprises a rotatably driven shaft and a vessel having a casing provided with both a passage for the introduction of the viscous material and a bore through which the shaft extends into the vessel. The bore has end and mid portions all larger in diameter than the shaft. The passage extends into the bore through the mid portion of the bore. One of the end portions leads into the vessel; the other end portion leads toward the outside of the vessel. The bore and the shaft form annular chamber means for providing a lower resistance to flow of the viscous material through the one end than through the other end portion of the bore.

3,804,424
GAP SEAL WITH THERMAL AND PRESSURE DISTORTION COMPENSATION

James F. Gardner, Chicago, Ill., assignor to Crane Packing Company, Morton Grove, Ill.

Filed Apr. 24, 1972, Ser. No. 246,823
Int. Cl. F16j *15/34*
U.S. Cl. 277—27 **4 Claims**



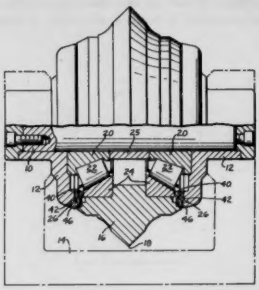
The disclosure is of a rotary mechanical seal of the gap type, particularly for large diameter shafts, which is designed to reduce or eliminate entirely distortions in the sealing washer thereof caused by thermal expansion of the washer or by a change in the pressure profile across the sealing face of the washer. Thermal deflection is counteracted by providing a chamber on a cylindrical section behind the sealing washer face, and subjecting the chamber to the pressure existing between the opposing faces of the seal. Shallow spiral grooves formed in one of the opposing faces and directed to produce a pressure across the faces in opposition to the normal pressure gradient thereacross serve to provide a variety of pressures one of which is tapped as the source of pressure for the chamber.

3,804,425
ROLLING CUTTER AND SEAL THEREFOR

Robert D. Goodfellow, Bedford, Pa., and Donald W. Busby, Durango, Colo., assignors to Subterranean Tools, Inc., Commerce City, Colo.

Filed Aug. 30, 1971, Ser. No. 175,870
Int. Cl. F16j *15/34*; **F16c** *19/49*
U.S. Cl. 277—92 **2 Claims**

The specification discloses a rolling cutter, especially for working rock formations and the like, and having a stationary central nonrotatable support port and an annular body part rotatable thereon with antifriction bearings interposed between the parts. The space in which the bearings are mounted is sealed to the rotary body by a nonmetallic seal ring, specifically, ceramic, which slidably engages the end of the adjacent antifriction bearing outer race which is pressed

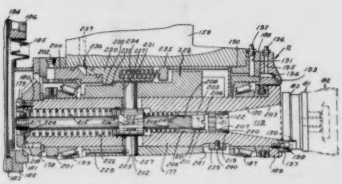


into sealing engagement with the race by a resilient rubber-like ring confined between the seal ring and a stationary cover at the respective end of the annular body.

3,804,426
MACHINING APPARATUS WITH AUTOMATIC TOOL CHANGING MEANS

George Mickas, Grosse Pointe Woods, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

Division of Ser. Nos. 703,148, Feb. 5, 1968, Pat. No. 3,516,149, and Ser. No. 889,826, Dec. 23, 1969, abandoned. This application Apr. 14, 1971, Ser. No. 133,922
Int. Cl. B23b *29/04*
U.S. Cl. 279—103 **2 Claims**



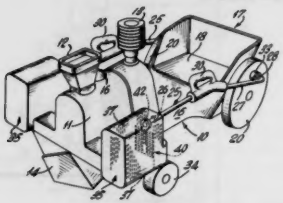
A horizontal spindle machine that is constructed and arranged to carry out a variety of machining operations such as milling, drilling, boring, tapping and the like, and which includes an automatic tool changing means for transferring tools in a predetermined sequence between a tool storage conveyor and a tool spindle. The machine includes a work table mounted on a rotary index table that is carried on two movable, perpendicularly disposed members to provide movement of the work table along the "X" and "Z" axes. The tool spindle is slidably mounted on the front side of a rigid column for movement along the "Y" axis. The tool storage conveyor is mounted on the left side of the rigid column on the operator's side of the machine. The tool changing means includes a transfer arm for transferring tools between the storage conveyor and a 90° tool turn around means, and a second transfer arm for transferring tools between the 90° turn around means and the tool spindle.

3,804,427

LOCOMOTIVE SIMULATING VEHICLE FOR CHILDREN

Raymond J. Lohr; Laurie Jay Campbell, and Robert T. Auer, all of Erie, Pa., assignors to Louis Marx & Co., Inc., Stamford, Conn.

Filed Apr. 6, 1973, Ser. No. 348,565
Int. Cl. A63f 19/00
U.S. Cl. 280—1.11 R 11 Claims



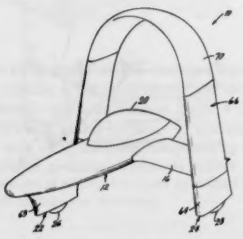
A child's vehicle has a body simulating a steam locomotive and its tender, with the tender forming a seat. A pair of simulated steam cylinders are provided on the front end of the body, one of each side, and the body is supported by a pair of front wheels and a pair of larger diameter rear wheels. A pair of drive rods, each on a respective side of the vehicle, have forward ends each reciprocable in a respective cylinder and rear ends each articulated eccentrically to a respective rear wheel to serve as a crank drive therefor. Handles on each drive rod are positioned to be grasped, by a child seated in the seat, to reciprocate the drive rods to propel the vehicle. The reciprocation of the drive rods effects operation of sound creating devices which produce a sound realistically simulating the sound of a steam locomotive in operation. In one embodiment of the invention, the sound is created by a series of flexible comb fingers reciprocated over a serrated surface. In another embodiment of the invention, the sound is created by pellets or the like tumbling in a closed compartment which may be either revolved or reciprocated.

3,804,428

SAILING VEHICLE

James L. Amick, 1464 Cedar Bend Dr., Ann Arbor, Mich.

Filed Oct. 26, 1972, Ser. No. 301,230
Int. Cl. B62d 39/00
U.S. Cl. 280—8 13 Claims



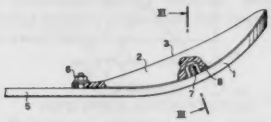
A land or ice sailing vehicle that has a fixed wing, running gear means and a steering system that enables the pilot to steer the runner means so as to adjust the yaw angle of the craft to obtain the desired wind attach angle. This structure eliminates some of the primary sources of aerodynamic losses found in conventional sailing vehicles in which the main running gear means are fixed and the sail is movable to adjust the angle of attack.

3,804,429

SKIS EQUIPPED WITH A FAIRING ADAPTED TO IMPROVE THEIR PERFORMANCE

Igino Rovatti, Via Rosta 7, Turin 10143, Italy

Filed June 27, 1972, Ser. No. 266,742
Claims priority, application Italy, June 28, 1971, 69195/71; Apr. 19, 1972, 23396/72
Int. Cl. A63c 5/06
U.S. Cl. 280—11.13 T 2 Claims



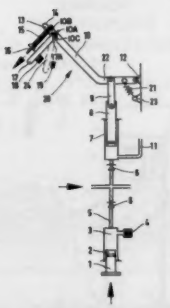
A ski tip fairing is disclosed which has the purpose of preventing two skis from overlapping. The fairing has a specially designed shape so as to generate a reactive force which not only prevents ski overlapping but assists in realigning the skis when they show a tendency towards overlapping.

3,804,430

SAFETY BELT TENSIONING ARRANGEMENT

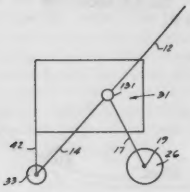
Ernst Fiala, Margaretenhoehe, Austria, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 7, 1972, Ser. No. 242,152
Claims priority, application Germany, Apr. 24, 1971, 2120172
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB 16 Claims



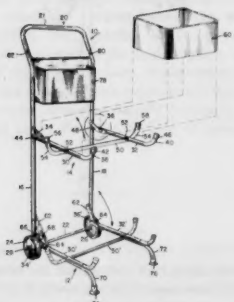
An improved safety belt that allows the occupant of a vehicle freedom of movement during normal driving conditions, but holds the occupant securely in position when a collision occurs. The improvement resides in the combination of a biased pivotal lever, one end of which is releasably coupled to the safety belt, and a displaceable piston adapted to respond to contact pressure resulting from a collision to rotate the lever away from the passenger and thereby tension the safety belt around the passenger. Further provided is a mechanism for causing the release of the safety belt from the lever when the biasing exerted on the lever returns the lever to its normal pre-collision position.

3,804,431
CONVERTIBLE SHOPPING CART
Fredric A. Robinson, 6625 N. Glenwood Ave., Chicago, Ill.
Filed Mar. 8, 1972, Ser. No. 232,819
Int. Cl. B62b 1/12
U.S. Cl. 280—36 C **3 Claims**



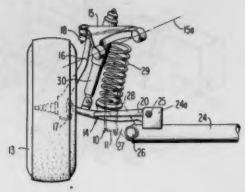
A convertible shopping cart which can be utilized as a rectangularly shaped basket suspended within and supported by a metal frame attached to and supported by two ground wheels wherein the rectangularly shaped basket may be moved to a substantially vertical position and is locked in that position by a disc-shaped pivot member attached on either side of the basket or frame and wherein the basket may be moved to a secondary horizontal position and locked in that position. The basket has a first pair of ground wheels which may be released to serve as front wheels with the wheels of the frame serving as the rear wheels. The basket can be completely removed from the frame and a second pair of ground wheels may be pivoted downwardly to allow the basket to be used independently as a cart. The frame and basket are collapsible to a stored position when not in use.

3,804,432
COLLAPSIBLE CART
David Lehrman, Cheltenham, Pa., assignor to The Ironess Company, Philadelphia, Pa.
Filed July 10, 1972, Ser. No. 270,112
Int. Cl. B26b 1/00
U.S. Cl. 280—36 C **8 Claims**



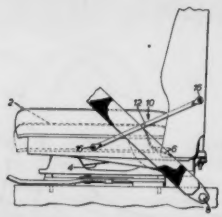
A collapsible cart is provided having upper and lower supports which may be moved between operative and inoperative positions. A laundry basket or the like may be supported on each support. Each support includes means to prevent undesired movement of the laundry basket. A utility receptacle may also be secured to the collapsible cart.

3,804,433
WHEEL SUSPENSION FOR VEHICLES
Hans O. Scherenberg, Stuttgart; Alfred Rothweiler, Esslingen-Hegensberg, and Erich Waxenberger, Neuhausen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Aug. 25, 1972, Ser. No. 283,669
Claims priority, application Germany, Aug. 25, 1971, 2142523
Int. Cl. B60g 3/14
U.S. Cl. 280—106.5 R **24 Claims**



A wheel suspension, particularly a front wheel suspension in motor vehicles, which utilizes triangular or similar guide members whose two guide arms are rigidly connected with each other and are elastically supported independently of one another at the vehicle superstructure; of the two guide members of a wheel suspension associated with two wheels disposed opposite one another on the two sides of the vehicle, one of the two guide arms of a guide member is elastically supported directly at the vehicle superstructure and absorbs the spring forces of the wheel spring system while the other guide arm is elastically supported at a transverse yoke which in turn is elastically connected with the vehicle superstructure.

3,804,434
SEAT BELT CLAMPING DEVICE
Robert Ronald Lacey, Kingsthorpe, England, assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed July 12, 1972, Ser. No. 271,325
Claims priority, application Great Britain, July 16, 1971, 33512/71
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB **6 Claims**



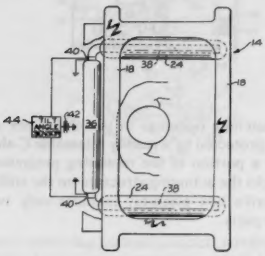
Seat belt clamping device for use with floor mounted seat belts and a resiliently suspended vehicle seat includes pairs of spring biased clamping bars mounted on each side of the seat. The lap belts pass through the clamping bars and are frictionally held thereby so that the portions of the belts contacting the occupant's lap will remain taut while the portions of the belts between the clamps and the floor anchors can alternately tighten and loosen as the seat moves up and down over its range of resilient movement.

3,804,435

VEHICLE ROLL-OVER SAFETY APPARATUS

George L. See, East Peoria, and John B. Waggoner, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 15, 1971, Ser. No. 180,611
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 9 Claims



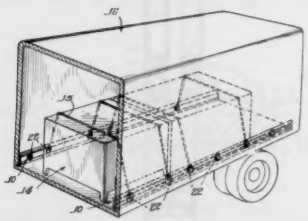
An air bag restraint system is associated with a vehicle having a roll-over protection structure for protecting an operator during a vehicle roll-over. The restraint system is actuated by a sensor which is responsive to the tilting over of the vehicle past a predetermined angle.

3,804,436

TIE RAIL

Donald J. Ehrlich, Monon, Ind., assignor to Monon Trailer Inc., Monon, Ind.

Continuation of Ser. No. 74,711, Sept. 23, 1970, abandoned.
This application July 13, 1972, Ser. No. 271,300
Int. Cl. B60p 7/00
U.S. Cl. 280—179 A 5 Claims



A tie rail for tying down objects such as cargo within a container such as a trailer is disclosed herein and includes an elongated base which is mountable to an inside wall of said container and which includes a plurality of openings. A connector, provided with each opening, for securing objects to the base of said rail is positioned entirely within an associated opening and mounted within recesses provided in a portion of said base which defines the opening.

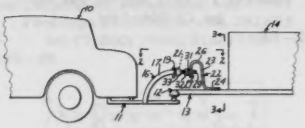
3,804,437

VEHICLE HITCH

James B. McCabe, 1900 Deo Dara Dr., Birmingham, Ala.

Filed Aug. 1, 1972, Ser. No. 276,961
Int. Cl. B60d 1/06
U.S. Cl. 280—489 2 Claims

A first upwardly extending bearing member is carried by a first support member connected to a towing vehicle and a second upwardly extending bearing member is carried by a second support member connected to a towed vehicle with an upper portion of the second bearing member to restrain



downward movement thereof. Resilient means urges the second bearing member toward the first bearing member to absorb downward forces.

3,804,438

PIPE INSULATION SYSTEM

Darral V. Humphries, Allentown, and James F. Kostecky, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 9, 1972, Ser. No. 273,660
Int. Cl. F16l 59/14
U.S. Cl. 285—47 20 Claims

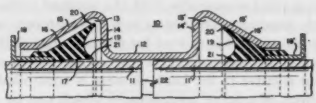
A prefabricated deformable laminated insulation panel for use in fluid conduit construction and/or an insulated pipeline system. The laminated panel comprises an outer skin, truncated prisms of insulating material having one base adhered to the outer skin and a relatively lighter inner skin adhered to the sides and the other base of the truncated prisms and to the outer skin, and means for spacing the insulation panel from and supporting the panel on the insulated pipe. The insulation panels are deformable about various shapes and sizes of pipe to provide an efficient insulation structure.

3,804,439

PIPE COUPLING

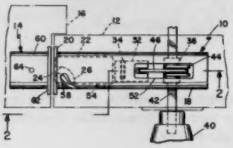
Richard O. Marsh, Jr., 701 Standard Life Building, Edgeworth Borough, Allegheny County, Pa.

Filed Aug. 7, 1972, Ser. No. 278,549
Int. Cl. F16l 17/00
U.S. Cl. 285—113 5 Claims



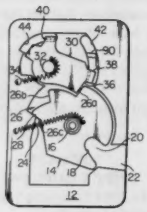
The specification discloses a threadless pipe coupling for sealingly connecting the adjacent ends of two coaxially juxtaposed pipe sections. The coupling comprises a sleeve element having its wall formed with annular grooves adjacent opposite ends and with annular gaskets disposed in the grooves and surrounding the corresponding pipe section. A sleeve-like extension of each gasket projects axially out of the open end of the coupling sleeve element by which to pull the gasket axially by hand into wedging sealing relation between the pipe and the conical wall of the groove in the sleeve element or reversely to disengage the gasket from sealing engagement with the sleeve and pipe. A helical band at each end of the sleeve element actuated by rotation of a thrust ring may be alternatively used to effect pulling motion of the gaskets.

3,804,440
ROTARY LOCKING BOLT
John R. Carey, 1996 Milford Pl., El Cajon, Calif.
Filed Oct. 17, 1972, Ser. No. 298,285
Int. Cl. E05c *5/04*
U.S. Cl. 292—58 **3 Claims**



A slide type bolt actuated by rotating a knob for normal opening and closing, and incorporating a rotary action of the bolt at the limit of sliding motion to the closed position. The bolt has notched lugs which lock on to a pin in the bolt receiving socket and prevent sliding withdrawal of the bolt. The locking action makes the bolt adaptable to sliding and double doors, as well as conventional single hinged doors.

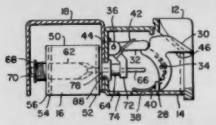
3,804,441
DOOR LATCH MECHANISM
Fumio Kobayashi, and Koji Sasai, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Aug. 28, 1972, Ser. No. 284,267
Claims priority, application Japan, Aug. 27, 1971, 46-65079
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **4 Claims**



Herein disclosed is an improved door latch mechanism for typical use on the door of a motor vehicle. The latch mechanism has a toothed latch element and a detent means which has a pawl engageable with the toothed latch element. The latch element has unlatched, half-latched and fully latched positions and is moved for rotation by a striker which is fast on the vehicle body. The pivotal movement of the detent means relative to the latch element is controlled by combined actions of a lever arrangement which can be manually operable from the inside of the vehicle by the use of a garnish button or from the outside of the door with or without use of a key.

3,804,442
ELECTRIC DOOR RELEASE
Daniel A. Powers, Monroe, Mich., assignor to Precision Hardware Inc., Detroit, Mich.
Filed Feb. 7, 1972, Ser. No. 223,862
Int. Cl. E05b *15/02*; **E05c** *3/08*
U.S. Cl. 292—341.16 **13 Claims**

An electric door release including individually separable strike face, strike box assembly and actuating structure wherein the actuating structure may be mounted on the strike box assembly in relatively perpendicular positions to facilitate installing the door release in both metal and wood door frames and in the inactive leaf of pairs of doors having different dimensions. The actuating structure of the electric door release is a push-type solenoid adapted to be mounted on the strike box assembly by a noncircular headed projection

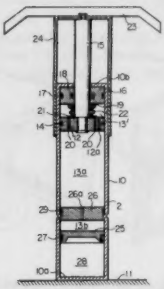


thereon and matching openings in the strike box assembly. The solenoid is protected by a readily releasable C-shaped clip extending over a portion of the mounting projection, which bracket also locks the actuating structure on the strike box assembly. The strike box assembly includes only two spring biased movable parts.

ERRATUM

For Class 292—262 see:
Patent No. 3,804,454

3,804,443
IMPACT ABSORBING DEVICE USING COMPRESSIBLE LIQUID
Koichi Komatsu, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Oct. 22, 1971, Ser. No. 191,926
Claims priority, application Japan, Oct. 26, 1970, 45-119095
Int. Cl. B60r *19/06*; **F16f** *9/06*
U.S. Cl. 293—70 **9 Claims**



An impact absorbing device is adapted for use as a bumper of motor vehicles. The device has a piston which is movable in a liquid chamber occupied with a compressible liquid such as silicon oil. The piston divides the liquid chamber into two compartments which communicate with each other through a restricted passage formed in the piston. When the piston is moved in response to an impact exerted on the device, the liquid is circulated from one of the two compartments to the other so that the energy of the impact is dampened by the restricted flow of the liquid through the restricted passage. The device may additionally have a gas chamber which is isolated from the liquid chamber by a floating piston or the like, in which instance a fixed partition member is located in the liquid chamber adjacent the floating piston. Expansion of the liquid in the liquid chamber due to temperature rise therein is thus compensated for by the contraction of the gas chamber.

3,804,444

BUMPER SPRING SUPPORT ASSEMBLY

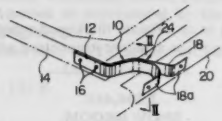
Tsutomu Sawada, Hiratsuka, and Masaaki Oguma, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed July 11, 1972, Ser. No. 270,825

Claims priority, application Japan, Aug. 7, 1971, 46-70144[U]

Int. Cl. B60r 19/06; G60r 21/14; B61f 19/04

U.S. Cl. 293—87 1 Claim



An impact absorbing bumper support adapted for supporting a bumper of an automotive vehicle, which bumper support has a rearward end portion secured to the frame structure of the vehicle body and a forward end portion secured to the bumper. The bumper stay also has a U-shaped portion which is elastically deformable for absorbing the energy of an impact force resulting from a collision encountered by the automotive vehicle for thereby satisfactorily alleviating the magnitude of the impact force exerted on a vehicle occupant and the vehicle body.

3,804,445

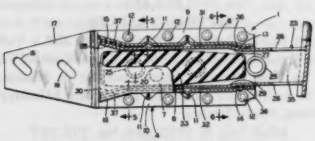
ANTI-PULL-OUT ENERGY ABSORBING VEHICLE BUMPER MOUNT CONSTRUCTION

Herman S. Church, Cuyahoga Falls, and James L. Hagener, Canton, both of Ohio, assignors to Teledyne-Mid-American Corporation, Hartville, Ohio

Filed Sept. 20, 1972, Ser. No. 290,484

Int. Cl. B60r 19/06

U.S. Cl. 293—88 4 Claims



A vehicle bumper mounting construction formed of a generally elongated box-like housing member enclosing a portion of an elongated beam member generally H-shaped in cross section. A pair of rubber pads having parallel surfaces are bonded one surface to the web of the H-beam member on either side thereof. The other pad surfaces are secured to the side walls of the housing. The housing member is provided with means for mounting the assembly on an automobile, and the H-beam is provided with a mounting flange for attaching the automobile bumper to the assembly. Special interengageable ramp formations are provided on the housing and H-beam with anti-rattle pads therebetween to prevent the beam and rubber pads from being pulled out of the housing when a pull such as a towing force is applied to the bumper. The rubber pads are pre-stressed or pre-loaded to hold the anti-rattle pads under compression in the at-rest or normal position of the mount components. Impact energy applied to the bumper is absorbed by the construction by deflection of the H-beam placing shear stress on the rubber pads.

3,804,446

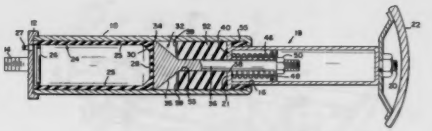
SHOCK ABSORBING BUMPER MOUNT

Paul H. Warrener, Jamestown, Ohio, assignor to Sherman Universal Corporation, Indianapolis, Ind.

Filed Sept. 27, 1972, Ser. No. 292,603

Int. Cl. B60r 19/06; F16f 11/00

U.S. Cl. 293—88 11 Claims



A shock absorbing bumper mount provided with a cylinder adapted to be mounted on an automotive vehicle and having a piston slidably carried therein and projecting outwardly therefrom for connecton to a bumper. An inflated bag is carried within said cylinder in bearing engagement with a conical slide. An elastomeric sleeve is slidably carried in said cylinder and is interposed between the apex of said slide and the adjacent end of said piston whereby upon movement of said piston toward a retracted position said sleeve will bear against the slide tending to cause said slide to compress the bag and to cause said sleeve to scrub against the interior cylinder wall to thus absorb the energy forcing the piston to retracted position.

3,804,447

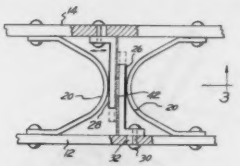
FRICTION BUMPER

Harry Slavin, 25631 Greenfield, Southfield, Mich.

Filed Dec. 13, 1971, Ser. No. 207,426

Int. Cl. B60r 19/06; F16f 7/08

U.S. Cl. 293—89 9 Claims



A double bar bumper construction for automobile vehicles characterized by means incorporated within the construction for providing frictional resistance against relative longitudinal movement of the two bumper bars of the construction.

3,804,448

SANITARY SCAVENGING IMPLEMENT

William L. Schmieler, 19609 Winslow Rd., Shaker Heights, Ohio

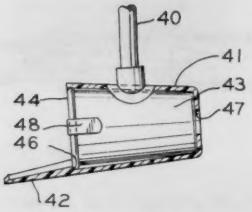
Filed Apr. 28, 1972, Ser. No. 248,634

Int. Cl. A47f 13/06

U.S. Cl. 294—19 R 3 Claims

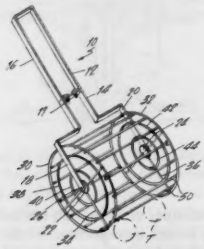
An elongated light weight shaft has at one end a handgrip portion and at the other end a scavenging scoop receptacle with an inlet opening facing transversely of the length of the shaft. An electric light on or near the handgrip portion illuminates the receptacle inlet and the locale adjacent thereto. The implement may be manipulated by one hand of a user while the user is standing in his normal upright position. The scoop receptacle may include, or support, a detachable

disposable container or liner. A closure lid is hingedly mounted relative to the scoop receptacle so that the lid can be moved into an open position while the receptacle is in scooping position and into closed position upon completion of the scooping operation, selectively, by manipulation of the shaft by the supporting hand of the user.



A pusher tool or brush is carried by the shaft near the receptacle. Propelling means are provided in the receptacle and are operable manually to propel the material scooped into the entry of the receptacle farther into the receptacle and away from the inlet opening so that the material can be carried in the receptacle without danger of spillage even with the shaft carried substantially upright.

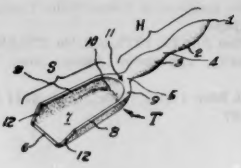
3,804,449
TENNIS BALL RETRIEVER
Leonard Falitz, 35-26 Prince St., Bayside, N.Y.
Filed Dec. 7, 1972, Ser. No. 312,800
Int. Cl. B65f *3/00*
U.S. Cl. 294—19 A **1 Claim**



A tennis ball retriever having a handle in the form of a yoke and a pair of second engaging rings interconnected by spaced bars, one of which is removable to provide for access of tennis balls picked up through the spaced bars after rolling action of the rings along the ground.

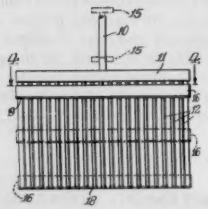
3,804,450
MULTI-PURPOSE HAND TOOL
Henry O. Guenzel, 301 W. Sixth St., Rusk, Tex.
Continuation-in-part of Ser. No. 6,852, Jan. 29, 1970, abandoned. This application Aug. 18, 1972, Ser. No. 281,750
Int. Cl. A01b *1/20*
U.S. Cl. 294—51 **5 Claims**

A multipurpose yard and gardening hand tool having a flat bottomed spade or scoop member and an elongate multiple grip handle having a pointed end. The scoop member has a sharpened transverse linear open end edge and upright side



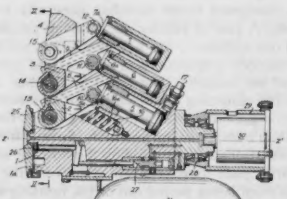
walls terminating in an arcuate thickened substantially semicircular gripping portion adjacent its juncture with the handle.

3,804,451
SNOW BROOM
Thomas P. Burke, 3324 W. 194th St., Homewood, Ill.
Filed Oct. 10, 1972, Ser. No. 295,849
Int. Cl. A01b *1/02*; **E01h** *5/02*
U.S. Cl. 294—54 **3 Claims**



A snow broom including a handle carrying a transversely extending base member to which are affixed a plurality of overlapping flexible metal tines. The stiffness of the tines can be adjusted by means of a sliding restraining member which restricts the freedom of flexure of the tines, and which when fully extended converts the broom into a shovel.

3,804,452
LIFTING GRAPPLE
Pierre Yvon David; Joel M. Charles, both of La Valette, and Maurice Robert Fourtier, Cros de Cagnes, all of France, assignors to Etat Francais represents far le Minister d'Etat charge de la Defence Nationale-Delegation Ministerielte fam l'Arnement, Paris, France
Filed Aug. 8, 1972, Ser. No. 278,797
Int. Cl. B66c *3/16*
U.S. Cl. 294—88 **6 Claims**



A lifting grapple composed of at least three fingers pivoted on a central pillar, each finger comprising at least two articu-

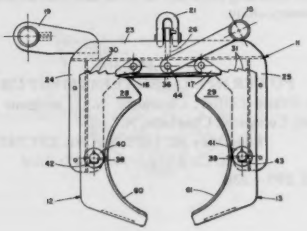
lated phalanges. The fingers are arranged at 120° from each other on the central pillar which is connected to a lifting tackle. The motion of the phalanges is controlled by stretcher screws acting on ties connected to the phalanges. When the fingers are folded or retracted, the lower end of the central pillar is clear and a foot lever located on the lower end automatically controls the closing of the grapple when the foot lever comes into contact with a load to be lifted.

3,804,453

UNDERWATER TORPEDO RECOVERY DEVICE

Barrie B. Walden, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1972, Ser. No. 315,713
Int. Cl. B66c *1/28*
U.S. Cl. 294—110 R **11 Claims**



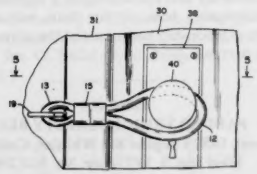
A device for retrieving torpedoes or other sunken cylindrical objects from a variety of bottom types and in a variety of attitudes is provided. The retriever is operated by mechanical means only and comprises a pair of opposed jaws which are balanced so as to open automatically when unrestrained and to close about the object upon contact therewith and subsequent downward movement with respect thereto.

3,804,454

SAFETY DOOR GUARD

J. V. Simmons, 800 N. Marsalis, Dallas, Tex.

Continuation-in-part of Ser. No. 106,497, Jan. 14, 1971, abandoned. This application June 30, 1972, Ser. No. 268,207
Int. Cl. E05c *17/04;* **B23p** *19/04*
U.S. Cl. 292—262 **9 Claims**



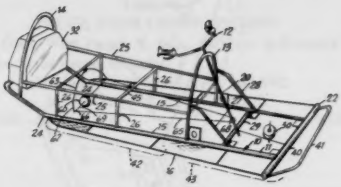
An auxiliary safety door guard having a flexible retainer member formed into two loop portions, one of which carries a screw type fastener adapted to secure the guard to a door frame member. The other loop may be deflected and releasably engaged about the door knob to prevent unauthorized entrance by restriction of the door opening. A collar member is positioned on the guard to occupy the space presented to the door exterior when the door is slightly opened to shield the cable from being severed from the exterior. Plastic sheathing on the retainer adds to the appearance and facilitates engagement and disengagement of the retainer. A method of fabricating the door guard is also disclosed.

3,804,455

SNOWMOBILE FRAME

Raymond W. Gorski, 10355 Main St., Findley Lake, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,350
Int. Cl. B62d *23/00*
U.S. Cl. 296—28 J **1 Claim**



A vehicle having a tubular U-shaped frame and a gyroscope mounted on the front of said frame. The gyroscope rotates about a vertical axis and will urge the frame of the vehicle to move in a level attitude so that the seat runs in a horizontal plane. The tubular frame is made of a U-shaped member having the closed end of the U at the rear of the vehicle and the front of the vehicle closed by a transverse member. A roll bar is fixed to the front of the frame and a rear roll bar is fixed adjacent the closed end of the U-shaped member. The rear of the U-shaped member is inclined slightly upward and a running board is attached to the sides of the U-shaped member.

3,804,456

SAFETY DEVICE FOR AUTOMOBILES: GLARE SHIELD

John A. Boyle, Mequon, Wis., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 3, 1971, Ser. No. 168,588
Int. Cl. B60j *3/00*
U.S. Cl. 296—97 E **1 Claim**

A thin flat horizontally elongated opaque panel like shield extends across the top of the instrument panel in front of the driver in an automobile. Means secured to the shield and panel enable the shield to be pivoted to any position between horizontal and vertical.

3,804,457

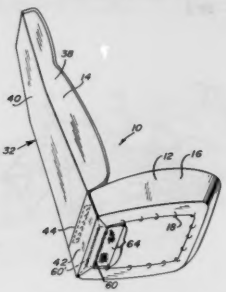
WRINKLE-FREE COVER FOR RECLINING SEAT

Richard F. Hellman, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 24, 1972, Ser. No. 309,532
Int. Cl. A47c *27/00*
U.S. Cl. 297—219 **7 Claims**

Improved seat cover for a seat having a tiltable back member includes a rear cover portion which covers the entire rear of the seat back and seat cushion, thus improving the aesthetic appearance of the seat and eliminating any chance of a person's fingers being pinched as the seat is moved from its forward to its normal position. The lower end portion of the rear cover portion is attached to a resilient means such as a sheet of elastic material or to a plurality of springs located

under the bottom of the seat and the resilient means is attached to the seat frame under tension. Thus, the rear cover portion can accommodate to changes in the distance between



the lower edge of the seat back member and the back of the seat cushion as the seat is tilted, so as to retain a taut, unwrinkled appearance in any position of adjustment.

3,804,458

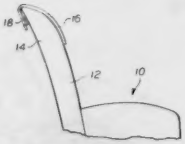
DISPOSABLE HEADREST COVER WITH IMPROVED ATTACHING MEANS

Richard Jannoni, Edison, N.J., assignor to Blessings Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 334,079

Int. Cl. A47c *7/62*

U.S. Cl. 297—220 **6 Claims**



This headrest cover has a disposable non-woven fabric with a yarn sewed to it for attaching the cover to a seat by entangling the yarn with attaching means connected to the back of the seat. The attaching means can be a multitude of small hooks such as "Velcro" hooks. A yarn which is preferably untwisted is folded back and forth in a closed S contour transversely of an attaching zone bounded on the top and bottom by substantially parallel lines and having a length running crosswise of the headrest cover. A plurality of rows of stitching hold the yarn on the cover. Because of the plural rows of stitching and the tortuous course of the yarn, the strands for engaging the hooks cover a wider zone and multiply the opportunities for entanglement of the attaching hooks in the threads and/or yarn strands.

3,804,459

CHAIR WITH INDEXING SUPPORTS

Jiro Nose, No. 7-14-5, Hon-cho, Funabashi, Japan

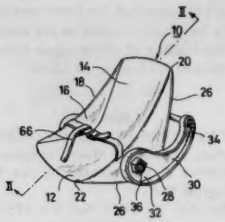
Filed Mar. 29, 1972, Ser. No. 239,135

Claims priority, application Japan, June 23, 1971, 46-54366; Nov. 15, 1971, 46-106777; Nov. 15, 1971, 46-106778

Int. Cl. A47c *7/14, 3/00*

U.S. Cl. 297—258 **4 Claims**

A chair is comprised of a main body including a seat portion with a back portion extending therefrom and two confronting sidewalls formed integrally therewith and somewhat extended downwardly to form legs of the chair. The confronting



sidewalls are externally and indexably provided with support arms for enabling the chair to serve as either a rocking chair or a stationary chair.

3,804,460

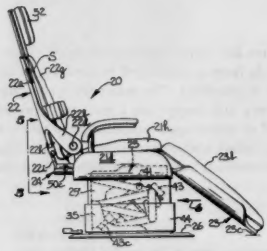
POWER OPERATED TREATMENT CHAIR

Dennis Frank Leffler, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed May 30, 1972, Ser. No. 257,743

Int. Cl. A61g *15/00;* **A47c** *1/04*

U.S. Cl. 297—330 **12 Claims**



The chair has an occupant supporting assembly including a seat rest and a relatively adjustable or tiltable back rest with associated power means for tilting the back rest, for raising and lowering the occupant support assembly, and for shifting the same forwardly and rearwardly in a rectilinear path relative to a supporting base of the chair without necessarily changing the relationship between and the attitude of the back rest and the seat rest.

3,804,461

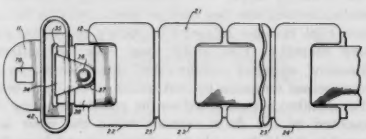
PADDED VEHICLE SAFETY BELT

Paul A. Kienel, 14829 Jupiter St., Whittier, Calif.

Filed Jan. 2, 1973, Ser. No. 320,290

Int. Cl. A62b *35/00*

U.S. Cl. 297—385 **8 Claims**



A vehicle safety belt passes through each of alternately disposed segments of a resilient belt pad. Each segment has a

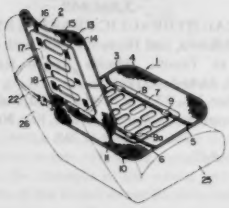
self-hinge and a passage for the belt web. The passage is at an angle to the run of the belt web such that retraction of the belt web folds the segments at the hinge line into a compact mass. Each end of the belt pad has a terminal segment with a strap fastener adapted to attach to either the belt latch at one end or the belt floor anchor at the other end. A latch end receptacle at the edge of the seat retains the compacted pad.

3,804,462

VENTILATED SEAT-AND-BACKREST STRUCTURE FOR PLACEMENT ON EXISTING SEAT

Heitaro Kobayashi, 10292, Inubosaki, Choshi-shi, Chiba-ken, Japan

Filed Mar. 5, 1973, Ser. No. 338,401
Int. Cl. A47c *7/14, 7/02*
U.S. Cl. 297—453 **10 Claims**



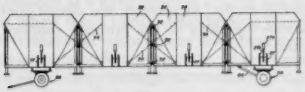
A ventilated seat-and-backrest structure comprises articulated seat and backrest structures, each comprising a frame, a mesh stretched across the frame to form a surface for supporting a sitter, two or more bow-shaped support members fixed at their ends to the frame and disposed away from the mesh and toward an existing seat with back on which the entire structure is placed, and a base plate secured to the support members and adapted to bear against the seat or its back and thereby to distribute thereover loads transmitted from the support members, the backrest structure being pivotally foldable over the seat structure.

3,804,463

MOBILE STORAGE APPARATUS FOR USE WITH CONCRETE MIXING PLANTS

Hans Mordhusrt, Surrey, British Columbia, Canada, assignor to West Coast Concrete Supply Ltd., New Westminster, British Columbia, Canada

Filed Mar. 15, 1972, Ser. No. 234,725
Claims priority, application Canada, Apr. 16, 1971, 110547
Int. Cl. B62d *53/00;* **B60p** *1/00*
U.S. Cl. 298—8 T **10 Claims**



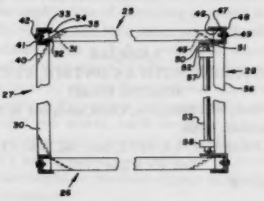
This relates to a mobile storage apparatus adapted for use with a concrete mixing plant or the like. This apparatus includes a plurality of storage bins for aggregates or like material, each bin having a discharge means thereon to permit the bin contents to be released therethrough. Means are provided to connect these bins together, with the bins and the connecting means adapted to permit the bins to be moved relative to one another from first positions wherein they are grouped in an overall generally curved configuration about a common discharge region to second positions in relation to each other suitable for travel of the mobile storage apparatus along a highway or the like. The above-mentioned discharge means are arranged on their respective bins such that when the latter are in said first positions, any material released through the discharge means enters said common discharge region. Suitable means are provided for securing the bins in said first and second positions.

3,804,464

TRUCK BODY CONSTRUCTION

Jacob N. Gust, West Fargo, N. Dak., assignor to Frontier Corporation, West Fargo, N. Dak.

Filed Feb. 26, 1973, Ser. No. 335,802
Int. Cl. B60p *1/28;* **B62d** *33/02*
U.S. Cl. 298—23 B **9 Claims**



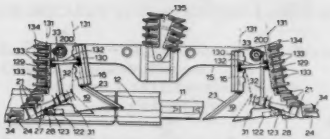
A truck body structure including a tail gate structure and control therefore which includes a light weight floor construction including a plurality of cross beams spaced apart a predetermined distance for proper support of a floor, a body mounted thereon which body provides through its specifically designed sides a relatively strong construction requiring no external or internal bridging and which sides through their design provide a greater carrying capacity for the vehicle and a design which permits easy cleaning of the vehicle. The gate structure is designed for proper swing opening of the gate through a lift-swing construction and in combination with a locking structure a door provided on the gate may be used for emptying the body.

3,804,465

LONGWALL MINING MACHINE HAVING PIVOTED CUTTER CARRIERS

Berthold Ostrop, Selm; Karl Harhoff, Werne an der Lippe; Christoph Rassmann, Lunen, and Martin Hermann, Altlunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed July 25, 1972, Ser. No. 275,003
Claims priority, application Germany, July 29, 1971, 2137962; Aug. 13, 1971, 2140609
Int. Cl. E21c *27/35*
U.S. Cl. 299—34 **14 Claims**



A coal plough composed of a beam carried by spaced-apart vertical supports disposed at the ends of the beam and engag-

ing a guide plate at the mineral face side of the conveyor and by a further cantilever type support engaging a guide rail disposed at the stowage side of the conveyor. Tool carriers are attached to the mineral face side supports so as to pivot within a plane extending parallel to the axis of the beam.

A spindle inclined downwardly towards the respective end of the beam is rotatably supported on each tool carrier. A floor cutter with mutually-perpendicular cutting edges intended for cutting the mineral face and the floor is mounted on each spindle so that rotation of the spindle will alter the cutting action effected by the floor cutter and hence control the operational position of the plough.

Each tool carrier bears a set of staggered cutters and an inwardly-directed blade which serves as a skimming and loading tool in respect of these cutters. A mounting piece, which supports additional cutters, and a further blade are pivotably supported by each tool carrier and disposed above the first mentioned set of staggered cutters and the blade. The mounting piece and further blade are linked in an articulated manner so that one or other of these components can move to a working position.

3,804,466

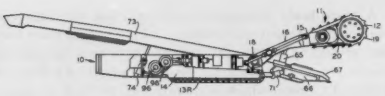
MINING MACHINE WITH A CONTROL SYSTEM FOR A MINING HEAD

Arthur L. Cilles, Worthington, Ohio, assignor to Jeffrey Galion Inc., Columbus, Ohio

Filed Mar. 12, 1973, Ser. No. 340,523

Int. Cl. E21c *27/24*

U.S. Cl. 299—78 **23 Claims**



A mining machine has a mining head with a rotary drum for cutting and breaking material out of a mine face pivotally mounted on the front end of the machine. A control system for the mining head has a control device to operate a brake to stop the rotary drum and in response to operation of the brake actuate an enabling device which permits the control device to subsequently connect a drive to the drum for rotation thereof. Another control device is operative to connect a drive for propelling the mining machine and in response to connection of the mining machine drive the enabling device is disabled to prevent the connection of the drive for the rotary drum.

3,804,467

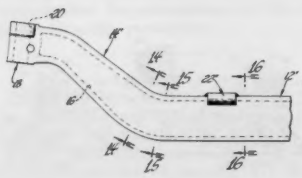
FRONT AXLE

John F. Austermann, Berkley, Mich., assignor to Lear Siegler Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 158,836, July 1, 1971, abandoned. This application July 20, 1972, Ser. No. 273,664

Int. Cl. B60b *35/06, 35/08*

U.S. Cl. 301—127 **7 Claims**



A front axle and the method of making same wherein the axle includes a central portion with a square cross section and wing end portions extending upwardly and outwardly from the central portion and having changing cross sections which change from the square cross section adjacent the central portion to a wing cross section having two elongated sides interconnected by two ends, at one of which is arcuate. In one embodiment, the wing cross section is oval and in another embodiment the wing cross section has converging sides. The wing portions taper toward the distal ends thereof and a king pin support hub is integral with and disposed at the distal end of each wing portion. The axle is made from a tubular member by forming the central portion of the tubular member into a square cross section by successively reducing the diameter of the end portions of the tube and gathering the end portions of the tube by shortening same to increase the wall thicknesses thereof and flattening the sides of the end portions to obtain the wing cross section and a terminal length which is substantially solid and of a rectangular cross section to define a king pin support hub.

3,804,468

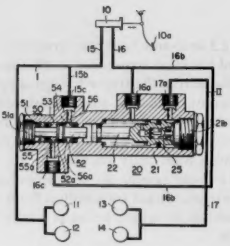
DUAL HYDRAULIC BRAKING SYSTEM

Masakazu Ishikawa, and Hiroyuki Oka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Division of Ser. No. 77,150, Oct. 1, 1970, Pat. No. 3,729,237. This application Apr. 12, 1973, Ser. No. 350,380

Int. Cl. B60t *13/00, 15/46*

U.S. Cl. 303—6 C **14 Claims**



A hydraulic brake system comprises two separate hydraulic circuits, one for the front wheels and the other for the rear wheels of an automotive vehicle. Both circuits are connected hydraulically to a master cylinder, and one of the hydraulic circuits contains a control valve assembly for varying the pressure of the hydraulic brake fluid in that circuit. Balance piston means, subjected to the pressure of the master cylinder and the pressure in the other of the two circuits, are provided in operative engagement with the control valve assembly for maintaining the control valve assembly in the inoperative condition when a failure occurs in the circuit connected to the balance piston means. As a result, the circuit containing the valve assembly operates at the pressure supplied from the master cylinder.

3,804,469

SKID CONTROL SYSTEM FOR MOTOR VEHICLES

Yasuhisa Takeuchi, Yokosuka, and Haruhiko Iizuka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 15, 1972, Ser. No. 253,121

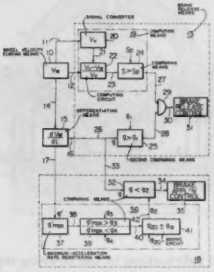
Claims priority, application Japan, Oct. 13, 1971, 46-80781

Int. Cl. B60t *8/10, 8/12*

U.S. Cl. 303—21 BE **12 Claims**

A method and a system for controlling the skid of a driving wheel or wheels of a motor vehicle are disclosed, in which the velocity of the driving wheel is first sensed so as to provide an

approximated vehicle velocity signal and a deceleration or acceleration rate signal. An approximated slip-ratio is computed from both the sensed wheel velocity and the approximated vehicle velocity and is compared with a predetermined slip-ratio signal. Braking pressure is released from the driving wheel during the braking operation if the approximated slip-



ratio signal is greater than the predetermined slip-ratio reference signal and concurrently the deceleration-rate is over a predetermined limit. The braking pressure is re-applied to the driving wheel when the deceleration rate decreases below a variable deceleration-rate reference signal which is varied in accordance with the changes in the wheel and road surface conditions in each of the brake re-application cycles.

3,804,470

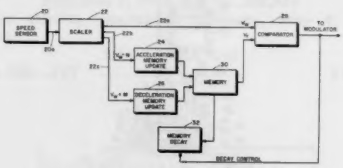
SPEED LOGIC FOR AN ADAPTIVE BRAKING SYSTEM

Michael Slavin, Gloucester Point; Ralph W. Carp, Glendale, both of Va., and Thomas C. Schafer, South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 1, 1972, Ser. No. 277,001

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **19 Claims**



An adaptive braking system for wheeled vehicles, such as automobiles, uses signals proportional to wheel speed to control braking during incipient wheel skid conditions. A capacitor whose decay rate is controlled is used to memorize a signal correlated to wheel speed. Generally, the memorized signal will be maintained at a fixed offset at a value less than an instantaneous wheel speed signal. After braking pressure is applied the instantaneous wheel speed may drop more rapidly than the memory capacitor can follow. If the instantaneous wheel speed signal drops through the memorized signal, braking pressure is attenuated. The memorized signal will now track the instantaneous wheel speed signal downward maintaining a further fixed offset where the memorized signal is greater than the instantaneous wheel speed signal. In response to the attenuated braking pressure wheel speed will increase while the memorized signal will continue to decay at its predetermined schedule so that eventually the instantaneous wheel speed signal will exceed the memorized signal at which time braking pressure will be restored. With the instantaneous speed signal now greater than the memorized signal, the memorized signal will track the instantaneous speed signal at the first mentioned offset.

3,804,471

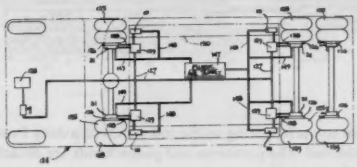
ACCELEROMETER AND ANTISKID BRAKING SYSTEM

Vernon R. Fish, 525 Meadowbrook Ave., Orange, Calif.

Filed Aug. 3, 1972, Ser. No. 277,676

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 B **24 Claims**



An antiskid braking system which includes valve means for controlling the application of operating pressure to the brakes, so as to rapidly release and then more gradually allow application of the brakes when a skid is indicated, the valve means being operated by the output of a fluid amplifier means which, in turn, is operated by signals from a linear accelerometer that moves in the path of the vehicle and an angular accelerometer that rotates with the wheel, each accelerometer including a seismic mass positioned by impinging fluid discharged from an adjacent outlet and relatively movable to vary the restriction of the fluid discharged to produce signals indicating acceleration and deceleration.

3,804,472

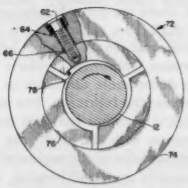
JOURNAL BEARINGS

Fredrick T. Schuller, and Warren A. Moore, both of Cleveland, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,264

Int. Cl. F16c *17/06*

U.S. Cl. 308—73 **2 Claims**



A plurality of bearing sectors are mounted in a housing. Each sector functions as a lobed area in the bearing to obtain the required lubricant film geometry.

3,804,473

MECHANICALLY ACTUATED SELF-LUBRICATED ROLL

Austin Barrett, Hollis, N.H., assignor to W. P. Evans & Son Ltd., Clifton, Manchester, England

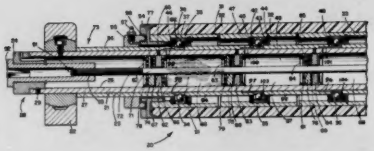
Filed Oct. 3, 1972, Ser. No. 294,632

Int. Cl. F16c *33/66*

U.S. Cl. 308—107 **7 Claims**

An elongated, multiple section roll of the straight, or bowed, type is provided with a hollow axle having lubricant passages from the interior of the axle to each bearing of each roll section. Spaced transverse partitions divide the interior of the axle into a plurality of lubricant chambers, one for each

passage. An elongated rod carries a plurality of piston heads, each in one of the chambers, for simultaneously extruding

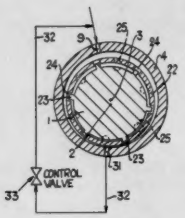


lubricant to each bearing as the rod is moved axially from one end of the roll. The partitions and piston heads are detachably mounted.

3,804,474
JOURNAL BEARINGS

Christopher Miles McCullock Ettles, 31 Wetherby Mansions, Earl Court Square, London S.W. 5, England

Filed Mar. 10, 1971, Ser. No. 122,751
Int. Cl. F16c *17/00*
U.S. Cl. 308—122 **5 Claims**



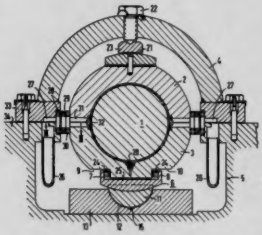
A journal bearing assembly in which, between the shaft and the bearing bush, there are provided means for carrying lubricant around the shaft from an inlet in the region of maximum clearance of bush and shaft. These lubricant distributing means may be vanes, operating similarly to those of a vane pump, resiliently deformable elements or spring sleeves with projections to entrain the lubricant. The assembly includes an apertured cylindrical member between the shaft and bearing mounted for rotation with the shaft, the bearing being provided with a lubricant inlet in the region of the normal point of maximum clearance of shaft and bearing, a lubricant outlet in the region of the normal point of minimum clearance and a control valve associated with the outlet.

3,804,475
RADIAL BEARING WITH ADJUSTABLE SHAFT SUPPORT

Rudolf Brucher, Wittekindstr. 11, Mulheim-Ruhr, and Rudolf Gemein, Falkenhagener Str. 11, Berlin, both of Germany

Filed Nov. 9, 1972, Ser. No. 304,924
Claims priority, application Germany, Nov. 9, 1971, 2155519
Int. Cl. F16c *23/00*
U.S. Cl. 308—122 **7 Claims**

In a radial bearing suitable for use with a machine shaft having an adjustable support structure which can compensate for undesirable operational forces, a bearing housing surrounds upper and lower bearing sleeves in which the lower sleeve and an adjustment member are positioned in a hemispherical bearing support. In turn, this support rests on the bottom plate of a bearing support block. Adjustment of the bearing sleeves is effected by having a space intermediate the bottom plate and the hemispherical bearing support continuously lubricated via a high pressure lubricating system. Additional lubricating medium in the gap between the shaft and bearing sleeves,

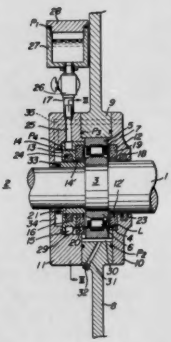


serves to provide lubrication to the bearing support, as operational speed is attained and the high pressure oil system is turned off.

3,804,476
BEARING DEVICES FOR ROTARY MACHINES

Toshio Nakamura; Hitoshi Egawa; Sadaharu Kawai, and Koichi Takahashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 26, 1972, Ser. No. 275,162
Claims priority, application Japan, Aug. 27, 1971, 46-65112
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 **16 Claims**



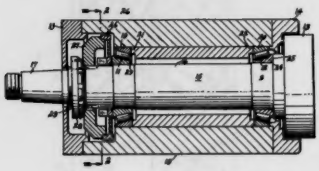
A bearing device for rotary machines, for example, electric motors for driving vehicles such as electric cars, of the type comprising roller or ball bearings and using oil or liquid lubricant for lubricating said roller or ball bearings, said bearing device being so designed that the oil or liquid lubricant is automatically supplied in a minimum quantity necessary for lubricating said bearings, whereby the supply interval of lubricant is extended, a leakage of lubricant is eliminated which would otherwise occur due to supply of an excessively large quantity of lubricant, the maintenance duty of the bearing device is alleviated and the continuous use of the bearing device for a long period of time becomes possible without the necessity of disassembly.

3,804,477

CENTRIFUGAL BEARING PRELOAD MECHANISM

Otto Richard Allmandinger, Cincinnati, Ohio, and John X. Russell, Troy, Mich., assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jan. 19, 1973, Ser. No. 325,075
Int. Cl. F16c 29/12
U.S. Cl. 308—207 7 Claims



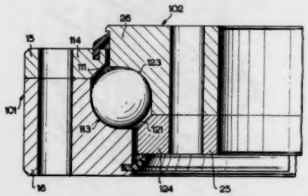
An adjustable bearing preloading mechanism which can apply a high bearing preload under low speed operating conditions and which operates to reduce the preload under high speed conditions to minimize heat build-up and subsequent wear in the bearing and to reduce horsepower requirements at high speeds. The device is substantially a flexible annular disc including a plurality of weights positioned adjacent its inner diameter and which is in contact with one of the races of a bearing to impart a preload thereto. The device rotates with the shaft supported by the bearing, and as the shaft speed increases centrifugal force acting on the weights causes an axial deflection at the inner diameter of the annular disc to reduce the preload on the bearings.

3,804,478

SINGLE-ROW ANGULAR CONTACT BALL BEARING

Dietrich Andree, Sadelhof, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed May 1, 1972, Ser. No. 248,954
Claims priority, application Germany, May 4, 1971, 7117238
Int. Cl. F16c 19/10
U.S. Cl. 308—227 9 Claims



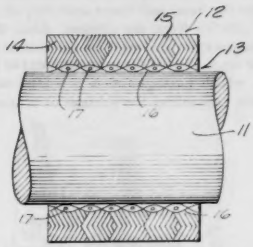
A single-row angular-contact ball bearing wherein an annulus of balls engages the concave external race surface of the inner race and the concave internal race surface of the outer race. The outer race has a circumferentially complete or arcuate ball confining portion which is outwardly adjacent to but spaced from the race surface of the inner race and is normally out of contact with the balls. The inner race has a circumferential complete or arcuate ball confining portion which is inwardly adjacent to but spaced from the race surface of the outer race and is normally out of contact with the balls. The material of those portions of the races which define the respective race surfaces is a hardened metal, and the material of the confining portions is unhardened metal. The confining portions may be integral with or are produced separately and thereupon assembled with the respective races.

3,804,479

LOW FRICTION FABRIC-LINED BEARINGS AND IMPROVED FABRIC THEREFOR

Neil W. Butzow, Greendale, and Bernard Harris, Bayside, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Dec. 21, 1972, Ser. No. 317,210
Int. Cl. F16c 33/18
U.S. Cl. 308—238 7 Claims



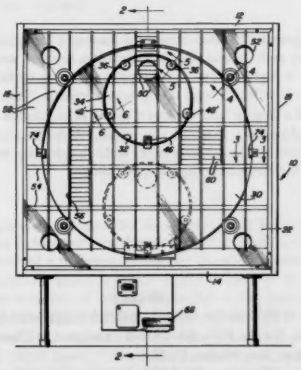
Unblended yarns are constructed and woven with other yarns to form a mixed fabric which is particularly suitable for use as the liner for resin bodied annular bearings which are subject to reversing loads, that is where one bearing element oscillates relative to the other or relative rotation or movement of the bearing elements regularly reverses in direction. More particularly, yarn of Teflon filaments and yarn of bondable filaments are woven in a 1 × 1 plain weave so that the filaments are just sufficiently loose to allow the capillary action of the liquid resin to thoroughly impregnate the fabric in the manufacture of the bearing and anchor the Teflon filaments to prevent their being worked loose from the resin by the reversing loads.

3,804,480

TAPE CARTRIDGE VENDING MACHINE WITH ROTATABLE PANEL

Charles L. Chamberlin, Conway, Ark., assignor to Sanibel Sound Co., Inc., Mattoon, Ill.

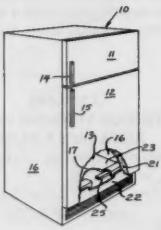
Filed Nov. 10, 1972, Ser. No. 305,243
Int. Cl. A47f 3/02
U.S. Cl. 312—117 8 Claims



A cabinet including multiple sides and the structure therein defining a plurality of horizontally and vertically spaced open-ended article receiving compartments opening in generally the same direction outwardly of one side of the cabinet. The

cabinet includes a partition extending over and closing the open side of the cabinet outwardly of which the compartments open and the partition is spaced outwardly of the outer ends of the compartments. A large generally circular first opening is formed in the partition and closed by means of a circular closure panel rotatably supported in the opening and having a medium size opening formed in one sector of the closure panel. A second generally circular closure panel is disposed in and closes the medium size opening and the second closure panel has an access opening formed in one sector thereof of a size to receive the hand and lower arm only of a person wishing to vend articles from the cabinet. Also, the cabinet includes a passageway extending from the area between the partition and the open ends of the compartment to the exterior of the cabinet, which passageway is provided with a vending mechanism for controlling the passage of articles through the passageway.

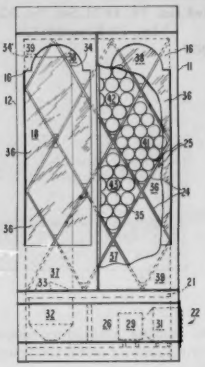
3,804,481
REFRIGERATOR CABINET STRUCTURE
Harry L. Tillman, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Dec. 27, 1972, Ser. No. 318,863
Int. Cl. A47b *81/00*; E25d *11/00*
U.S. Cl. 312—214 **6 Claims**



A refrigerator cabinet structure having a refrigerated space defined by wall means one of which is a bottom wall having a zone with a high incidence of impact shock as by falling heavy objects in which this wall comprises a substantially rigid insulation and a fragile liner exposed to the refrigerated space with a shock absorbing mass at the impact zone located between the liner and the insulation so as to be hidden by the liner but available for absorbing high impact shock.

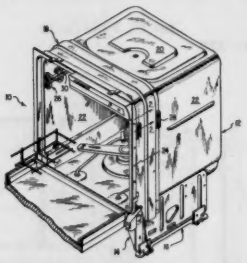
3,804,482
WINE STORAGE CABINET ASSEMBLY
Richard D. Smith, Palo Alto, Calif., assignor to Cheateau Wine Cellar Co., San Mateo, Calif.
Filed Jan. 24, 1972, Ser. No. 219,968
Int. Cl. A47b *77/08*
U.S. Cl. 312—236 **1 Claim**

A refrigerated housing is disclosed for housing wine bottles including a plurality of bins positioned above a refrigeration unit with the bins so located as to permit cool air passage upwardly of housing to cool the bottles therein. The bins are defined by panels positioned at a 60° angle with respect to the



horizontal. In the preferred embodiment the bins are 12½ inches wide and the housing is 2½ bins wide.

3,804,483
UNIT-HANDLED ROLLER ASSEMBLY FOR PLASTIC TUBS
Matthew K. Afful, and David L. Clark, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Dec. 29, 1972, Ser. No. 319,348
Int. Cl. A47b *88/00*
U.S. Cl. 312—341 R **15 Claims**



A unit-handled roller assembly for front loading dishwashers employing a unipartite plastic tub includes a plastic roller mounting stud having an integral annular array of spaced resilient fingers at the tub wall engaging end thereof for maintaining a roller in assembled relationship with the stud prior to installation and serving as an integral washer between the roller and tub wall upon installation.

The roller mounting stud also includes an integral, annular sealing ridge upstanding from the tub wall engaging end of the stud in surrounding relation to a central mounting bore for deforming and/or abrading the softer tub wall into fluid tight sealing engagement with the annular ridge.

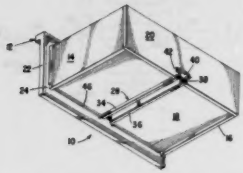
A plurality of the roller mounting assemblies are anchored in a common reinforcing channel member backing a metal collar adjacent the front open end of the dishwasher.

3,804,484

SLIDABLE DRAWER CONSTRUCTION

Herman H. West, Vinton, and Ralph G. Nofsinger, Roanoke, both of Va., assignors to The Singer Company, New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,205
Int. Cl. A47b 88/00
U.S. Cl. 312—347 4 Claims



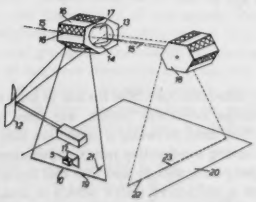
A drawer for an article of furniture having a two-piece plastic front including a decorative front surface and a rear surface secured thereto. A hollow is located between the surfaces substantially between the ends of the drawer and a slot in communication with the hollow is formed in the rear surface in a plane with and slightly below the drawer bottom. A slide member is disposed on the underside of the bottom and includes a lug on the leading end and a tab on the trailing end. The lug is bent downwardly relative to the bottom engaging surface of the slide and is inserted into the slot with the bent leading end in the hollow. The tab end is secured to the drawer back.

3,804,485

APPARATUS USED IN THE TRACKING OF OBJECTS

Graham Morley Clarke, Edinburgh, Scotland, assignor to Ferranti Limited, Lancashire, England

Claims priority, application Great Britain, Oct. 27, 1971, 49884/71
Filed Oct. 25, 1972, Ser. No. 300,567
Int. Cl. G02b 17/00
U.S. Cl. 350—7 11 Claims



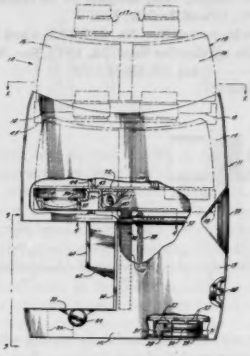
Apparatus for tracking an object within a plane area in space comprises means for scanning the area in non-parallel directions with flat beams of optical radiation and detecting radiation reflected from any object in the plane. A single flat beam is produced by causing a near-parallel beam of radiation from a laser to diverge in one plane only towards a rotatable multifaceted drum. Parts of each facet are reflective of the radiation and rotation of the drum causes the beam to scan the plane area; the remainder of each facet is transmissive of the radiation and permits the beam transmitted to be diverted towards a further multifaceted drum on which a reflective part of a facet thereof is in the path of the diverted beam and causes the beam to scan the plane area in a different direction.

3,804,486

ADAPTER STAND FOR CONVERTING A BINOCULAR TO A MICROSCOPE

Gerrit A. Van Exel, Fullerton, and Alfred A. Akin, Jr., West Covina, both of Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed July 20, 1972, Ser. No. 273,450
Int. Cl. G02b 21/24
U.S. Cl. 350—18 10 Claims



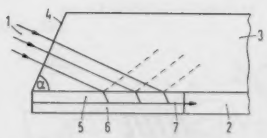
An adapter stand which enables use of a conventional binocular as a microscope. The binocular is supported on a platform which is movable with respect to a specimen stage on the stand for focusing. An auxiliary objective lens on the platform is aligned with one monocular optical system of the binocular to convert the monocular to a low-power microscope.

3,804,487

OPTICAL INPUT COUPLER FOR A LIGHT GUIDE

Hans Mahlein, Munich, Germany, assignor to Siemens AG, Berlin and Munich, Germany

Filed Feb. 1, 1973, Ser. No. 328,764
Claims priority, application Germany, Feb. 7, 1972, 2205625
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 8 Claims



An optical input coupler for introducing light into a light guide that is formed as a dielectric guide layer arranged on a first surface of a transparent carrier member characterized by a first dielectric input layer of highly refractive material relative to the material of the carrier member disposed on the surface of the carrier member adjacent the end of the dielectric light guide layer to form a first boundary surface, a second dielectric input layer of low refractive material relative to the carrier member disposed on the first input layer to provide a second boundary surface, and the carrier member has a second surface inclined at an angle of the first surface so that when a light is projected on the second surface normal to the second surface the light is subjected to refraction at the first boundary surface to produce refracted light which strikes the

second boundary surface at the critical angle of total reflection and the light is coupled into the dielectric guide layer. Preferably, the second surface is coated with an anti-reflection material and the first input layer as well as the dielectric light guide layer are zinc sulphide while the second input layer is magnesium fluoride.

3,804,488

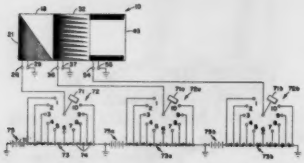
LIGHT BEAM SCANNING SYSTEMS AND BEAM SHIFTING DEVICES FOR USE IN SUCH SYSTEMS

Dayton D. Eden, Dallas, Tex., assignor to Advanced Technology Center, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 817,612, April 14, 1969, abandoned. This application Sept. 28, 1971, Ser. No. 184,541

Int. Cl. G02f *1/28*

U.S. Cl. 350—160 R **27 Claims**



A light beam scanning system for deflecting a beam of light in mutually perpendicular planes having a first electro-optic device for deflecting the beam in one plane and a second electro-optic device in series with the first for deflecting the beam emergent from the first device in the same or a second plane. An optical device having a planar rectangular body of an electro-optic substance provided with aligned pairs of electrodes on opposite sides thereof which divide the body into serial prism portions through which a beam of light directed on one end of the body passes successively to cause shifting of the angle of the beam as it emerges through the other end of the body.

3,804,489

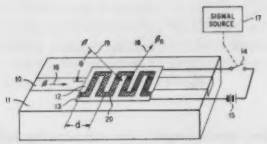
ELECTRO-OPTIC THIN-FILM DIFFRACTION LOSS MODULATOR

Tingye Li, Rumson, and Robert Dean Standley, Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 6, 1972, Ser. No. 312,682

Int. Cl. G02f *1/26*

U.S. Cl. 350—160 R **9 Claims**



An optical switch useful in thin-film electro-optic light guides relies on an induced stationary diffraction grating. The grating is produced by an interdigital electrode structure which is deposited on the electro-optic guide. The application of a voltage to the electrode pattern produces a spatial modulation of the refractive index of the guide which acts as a diffraction grating to light traveling in the guide. This grating causes light in the guide to be diffracted out of the guide, thereby stopping transmission. Removal of the voltage eliminates the grating and restores transmission.

3,804,490

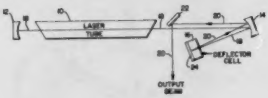
PULSE MODULATION AND CAVITY DUMPING LASERS

Robert M. Montgomery; Eddie H. Young, Jr., both of Indialantic, and Richard H. Johnson, Palm Bay, all of Fla., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 8, 1972, Ser. No. 251,019

Int. Cl. G02f *1/16*

U.S. Cl. 350—161 **5 Claims**



A method and apparatus for deflecting light using a propagating index of refraction gradient which is produced in an acousto-optic modulator by an avalanche semiconductor circuit to refract an incident light beam whose width is less than one half of the acoustic wave's wavelength at an angle which is a function of the amplitude of the acoustic input. The deflector can be used as a cavity dumping device or a scanner.

3,804,491

MULTILAYER REFLECTION PROOF FILM

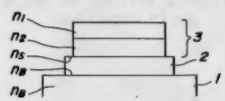
Tadashi Morokuma, and Tokujiro Kozawa, both of Tokyo, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 15, 1972, Ser. No. 280,856

Claims priority, application Japan, Aug. 16, 1971, 46-62172; May 1, 1972, 47-43540

Int. Cl. G02b *1/10*

U.S. Cl. 350—164 **7 Claims**



A multilayer anti-reflection film for use in high class camera lenses, microscope objective lenses, etc. has an anti-nonhomogeneous film held between a reflective film and a glass substrate and having a refractive index continuously changing in a direction perpendicular to said film and toward the outermost film from a refractive index which is equal to the refractive index of the glass substrate. The continuous change of refractive index of the nonhomogeneous film is effected by continuously changing a mixing ratio of the amount of vapors produced when both materials having large and small refractive indexes are vapor deposited on the glass substrate.

3,804,492

APERTURE VIEWING ZOOM LENS SYSTEM

Milton H. Sussman, Amherst, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

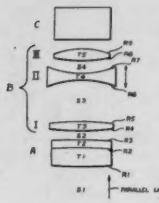
Filed Jan. 2, 1973, Ser. No. 320,369

Int. Cl. G02b *15/14*

U.S. Cl. 350—184 **4 Claims**

A compact three component zoom lens system for aperture

viewing permits extended interchangeability of microscope objectives and greater versatility in microscopy techniques by



substantially extending the focusing range without substantial changes in magnification.

3,804,493

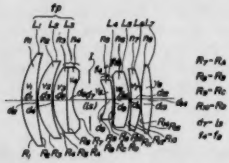
ACCURATE LENS SYSTEMS FOR PRODUCING AN EXTREMELY SMALL IMAGE IN A REDUCED SCALE

Masaki Matsubara, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 6, 1972, Ser. No. 241,527

Int. Cl. G02b *9/62, 9/64*

U.S. Cl. 350—214 **4 Claims**



An accurate lens system for producing an extremely small image in a reduced scale, which is constructed as two groups of lens systems located in front of and at the rear of an iris, respectively, the front group of lens system consisting of two or three lens components including one or two composite lenses and the rear group of lens system consisting of a first lens component of negative meniscus lens, second and third lens components of positive meniscus lenses, and a fourth lens component of positive meniscus lens or positive lens, and which is defined by the following five conditions, i.e.

I. $0.9f < f_P < 1.2f$,

II. $0.35f < |f_B| < 0.75f, f_B < 0$,

III. $0.17f < |R_B| < 0.23f, R_B < 0$,

IV. $|R_C| < |R_D|, R_C < 0, R_D < 0$, and

V. $0.9\,(|R_A| + R_B|)/2 < l_S < 1.4\,(|R_A| + |R_B|)/2$

where f is a composite focal length of the total lens system, f_P is a composite focal length of the front group of lens system, f_B is a focal length of the first lens component of the rear group of lens system, R_B is a radius of curvature of the lens surface of the first lens component facing the iris of the rear group of lens system, R_C is a radius of curvature of the lens surface of the first lens component facing the image of the rear group of lens system, R_D is a radius of curvature of the lens surface of the second lens component facing the iris of the rear group of lens system, R_A is a radius of curvature of the lens surface of the lens facing the iris and which is the nearest to the iris of the front group of lens system, and l_S is an air space between the front group of lens system and the rear group of lens system.

3,804,494

TELEPHOTO LENS SYSTEMS HAVING SMALL TELEPHOTO RATIO

Keiichi Ito, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Sept. 28, 1972, Ser. No. 292,911

Claims priority, application Japan, Oct. 1, 1971, 46-76236

Int. Cl. G02b *9/34, 9/60*

U.S. Cl. 350—218 **3 Claims**

A telephoto lens system having a small telephoto ratio, which is constructed as front and rear groups and six lenses, in which the front group of lenses consist of a first positive meniscus lens that has its object side a convex surface, a second negative meniscus lens that has its object side a convex surface, a third positive meniscus lens that has its object side a convex surface, and a fourth negative lens, all lenses being arranged in succession in the order as mentioned from the side of an object and the second and third lenses being combined together to form a compound lens, and the rear group of lenses are largely spaced apart from the front group of lenses and consist of a fifth negative lens and a sixth positive lens, the fifth and sixth lenses being arranged in succession in the order as mentioned from the object side and combined together to form a compound lens or slightly spaced apart one from the other, and which is defined by the following four conditions, i.e.

1. $n_1 < 1.55, n_3 < 1.55; n_2 > 1.7, n_4 > 1.7; n_5 - n_6 > 0.07$,
2. $n_3 - n_2 > 0.2$,
3. $25 > \nu_5 - \nu_6 > 15$, and
4. $0.8 < |f_4/f_{1\,2\,3}| < 5.0$

where n_1 to n_6 are refractive indexes of the first to sixth lenses, respectively, ν_5 and ν_6 are Abbe's numbers of the fifth and sixth lenses, respectively, f_4 is a focal length of the fourth lens, and $f_{1\,2\,3}$ is a composite focal length of the first, second and third lenses.

3,804,495

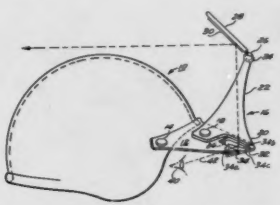
REAR VISION REFLECTION DEVICE FOR A HELMET

Robert S. Rayow, 446 W. 55th St., New York, N.Y., and Charles L. Gillette, 2 Grace Ct., Brooklyn, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,762

Int. Cl. 350 *307*; **G02b** *7/18*

U.S. Cl. 350—298 **3 Claims**

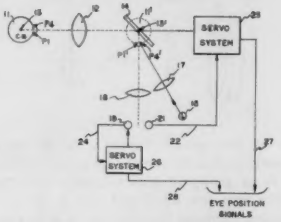


A rear vision reflection device is adapted to be affixed to a protective helmet of the type worn by motorcyclists. It includes a single reflected surface prism mounted on an upright support attached to the visor of the helmet with an adjustable mirror at the other end of the support. The mirror provides a rear view reflected sight line to the prism and the prism is normally positioned above the normal forward line of sight of the wearer.

3,804,496
TWO DIMENSIONAL EYE TRACKER AND METHOD FOR TRACKING AN EYE

Hewitt D. Crane, Portola Valley, Calif., and Tom N. Cornsweet, Chevy Chase, Md., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Dec. 11, 1972, Ser. No. 314,265
Int. Cl. A61b 3/10; G01b 11/26; H01j 39/12
U.S. Cl. 351—6 **11 Claims**

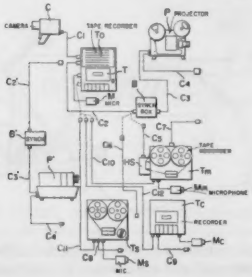


An eye tracker for continuously tracking orientation of the optic axis of an eye in which the eye is flooded with light so that Purkinje images are formed. Two of the Purkinje images are deflected so as to incident on photodetectors. The eye tracker includes optic means for forming an image of the eye with input and output optics arranged to operate on the image of the eye rather than the eye itself. A relatively small two-dimensionally pivoted mirror is disposed at the center of rotation of the image of the eye so as to have fast response to rotation movements of the eye. Further, servo means are provided for moving split-field photodetectors on which the first and fourth Purkinje images are incident. Tracking the position of the Purkinje images through the photocells gives an indication of the orientation of the optic axis of the eye.

3,804,497
SYSTEM FOR SIMULTANEOUS RECORDING WITH A CAMERA AND SYSTEM FOR SYNCHRONIZED REPRODUCTION

Mitsutoshi Ogiso, Kawasaki; Kiyoshi Takahashi, Tokyo; Hiroshi Furukawa, Tokyo, and Takashi Itani, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 14, 1972, Ser. No. 289,166
Claims priority, application Japan, Sept. 14, 1971, 46-71428
Int. Cl. G03b 31/04
U.S. Cl. 352—17 **11 Claims**

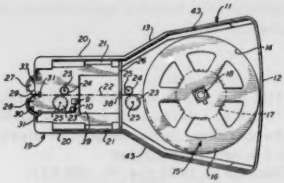


In a magnetic tape for recording a sound sequence in relation to an image sequence to be recorded on a film, a control signal sequence which corresponds to each constitutional part of said image sequence in a film is recorded. A tape recorder is used for recording sound information which is quite independent of said sound sequence, to effect after-recording of sound which corresponds to the image on the film. Other control signals entirely different from said control signal sequence, for moving the film and a tape synchronously, are recorded through the tape recorder simultaneously with the after-recording. In such manner, a sound signal formed by simultaneous recording with a camera and a sound signal formed by after-recording on one roll of a film are selectively and synchronously reproduced.

3,804,498
CASSETTE FOR FILM

Ira L. Lopata, New York, N.Y.; Jocob W. Hoerner, Ramsey, and Theodore A. Sloane, Towaco, both of N.J., assignors to Ragen Precision Industries, Inc., North Arlington, N.J.

Filed Feb. 28, 1973, Ser. No. 336,695
Int. Cl. G03b 23/02
U.S. Cl. 352—78 R **9 Claims**

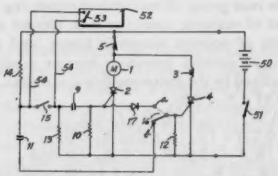


A cassette for film providing a housing in which there is one space for a wound up film and a second space through which the unwound portions of the film may be lead; a passage for a projection beam of light consisting of apertures in the second space provides for the projection beam to pass through a portion of the film which has been moved out of the first space, but while it is still in the second space.

3,804,499
MOTION PICTURE CAMERA CONTROLS

Toyonori Higuma, Tokyo, Japan, assignor to Kabushiki Kaisha Yashica, Tokyo-to, Japan

Filed Apr. 9, 1973, Ser. No. 349,278
Claims priority, application Japan, Apr. 18, 1972, 47-45042
Int. Cl. G03b 21/38
U.S. Cl. 352—169 **10 Claims**

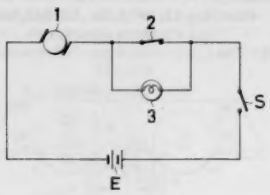


A motion picture camera having an electromagnet which is energized only briefly in order to stop the operation of the camera. The camera is capable of being operated both continuously or in a single-frame mode. Also, the camera includes for starting and stopping purposes, a simple switch having only a pair of terminals bridged by a single switch blade. The circuitry which connects the above components is such that the electromagnet is briefly energized upon opening of a start-stop switch in order to terminate operation of the camera motor as well as to automatically bring about deenergizing of the electromagnet with the camera motor being capable of resuming its operation only upon closing of the start-stop switch.

3,804,500
APPARATUS FOR DETECTING BATTERY VOLTAGE FOR D.C. MICROMOTOR EQUIPPED WITH SPEED GOVERNOR

Hiroshi Hirata, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 1, 1972, Ser. No. 258,759
Claims priority, application Japan, July 21, 1971, 46-64585; Sept. 9, 1971, 46-88805
Int. Cl. G03b *1/00*
U.S. Cl. 352—171 **7 Claims**

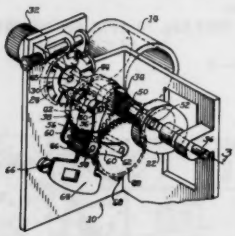


An apparatus comprising a speed governor for keeping a direct current micromotor rotating in steady state by regulating current flowing through the rotor of the motor, a battery serving as a power source for supplying power to the motor by way of the speed governor, and a lamp incorporated in the circuit of the speed governor. The lamp is lighted when voltage supplied from the battery is higher than the level required for operating the load and is turned off when the voltage is not higher than the required level.

3,804,501
REVERSING MECHANISM FOR MOTION PICTURE PROJECTORS

Raymond W. H. Kim, and Jaroslav Cherniavskyj, both of Skokie, Ill., assignors to Bell and Howell Company, Chicago, Ill.

Filed July 25, 1972, Ser. No. 275,066
Int. Cl. G03b *1/00*
U.S. Cl. 352—173 **5 Claims**

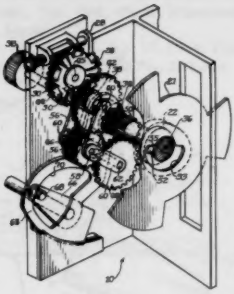


A reversing mechanism for a motion picture projector having movable gears for changing the phase relationship by 180° of the cams which drive the shuttle. One of the cams is moved 180° to permit the use of this mechanism with a shutter having any number of blades.

3,804,502
REVERSING MECHANISM

James G. Woodier, Chicago, Ill., assignor to Bell and Howell Company, Chicago, Ill.

Filed July 25, 1972, Ser. No. 275,067
Int. Cl. G03b *1/00*
U.S. Cl. 352—173 **6 Claims**

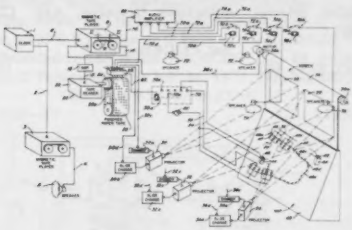


A reversing mechanism for a motion picture projector having movable gears for changing the phase relationship by 180° of the cams which drive the shuttle. One of the cams is moved 180° to permit the use of this mechanism with a shutter having any number of blades. The movable gears drive the cam when the projector is operating in the reverse mode, but a positive drive from the shutter drives the cam when the projector is operating in the forward direction.

3,804,503
PROJECTOR AND INDICATOR COORDINATING APPARATUS

John E. Sissom, 6234 Northaven, Dallas, Tex.

Filed Mar. 15, 1972, Ser. No. 234,854
Int. Cl. G03b *31/06*
U.S. Cl. 353—15 **9 Claims**



An automated theater having sound production apparatus, projector apparatus, and a graphic representation having indicator lights thereon in combination with a programmed tape reader apparatus to maintain sound, projection and graphic indication in synchronized relation. The program apparatus is stepped by timing pulses picked up from the sound recording tape and the tape reader controls illumination of indicator lights and a plurality of slide projectors.

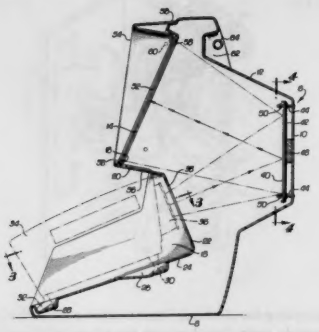
3,804,504
MINI-THEATER

Milton B. Scott, 1027 Summit Dr., Beverly Hills, Calif.

Filed Sept. 18, 1972, Ser. No. 289,792
Int. Cl. G03b *21/28*
U.S. Cl. 353—77 **3 Claims**

A mini-theater for use in projecting images comprising a readily portable housing adapted to support a projector and

having a rearwardly disposed mirror and an upwardly and forwardly disposed rear projection screen, wherein the housing proper is a one-piece molded plastic structure having a projected light inlet positioned to direct rays to the mirror and thence to the rear of the screen, a screen opening across which a screen is mounted with a cowl about the opening which serves as a light shield and is detachably mounted on the housing and detachably secures the screen. The screen opening is large enough for the insertion of the mirror therethrough. The housing has a lower portion upon which a projector is receivable and which has locally depressed areas to removably receive the leg elements of a projector, the shape of the housing and arrangement of the functional parts thereof combining compactness and utility, as well as strength.



3,804,505

AUTOMATIC FOCUSSING ARRANGEMENT

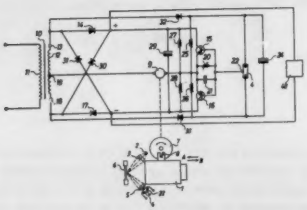
Eduard Wagensonner; Ulrich K. Schmidt, and Alois Rieder, all of Munich, Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Filed Aug. 11, 1971, Ser. No. 170,792

Claims priority, application Germany, Aug. 12, 1970, 2040011

Int. Cl. G03b *3/00*

U.S. Cl. 353—101 **10 Claims**



Mounted on a movable carriage are a light and a lens focussing the light onto the slide. Also mounted on the movable carriage are a first and second photoresistor series connected which receive light at the center portion when the light is properly focussed and unevenly over the two halves when it is improperly focussed. An error signal is derived from the unbalance in the two photo elements by connecting the center tap of the photo element to the commonly connected gates of an npn and pnp transistor whose emitters are connected in common to a motor winding whose other terminal is in turn connected to the center tap of a transformer furnishing line voltage. The emitter-collector circuits of the two transistors are connected across the transformer secondary via a bridge rectifier. The direction and magnitude of the current flow through motor winding determines the direction of movement of the carriage. The bridge rectifier output may also be used to energize the activating relay for the slide changing means.

3,804,506

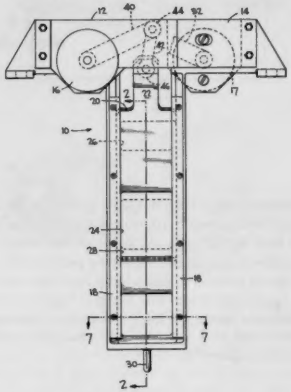
ROTARY SOLENOID SHUTTER DRIVE ASSEMBLY AND ROTARY INERTIA DAMPER AND STOP PLATE ASSEMBLY

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Walter L. Cable, Freehold, N.J., and Harold B. Dougherty, Hightstown, N.J.

Filed May 21, 1973, Ser. No. 361,906

Int. Cl. G03b *9/16, 9/42*

U.S. Cl. 354—234 **6 Claims**



A camera shutter assembly having a pair of superposed opaque planar shutter blades, each having an aperture and being arranged for reciprocal linear movement is disclosed. A pair of rotary solenoids, each connected to one of the blades by a linkage and arranged to be actuated separately at a predetermined interval is provided. An inertia damper and stop plate is built into each solenoid to prevent rebound.

3,804,507

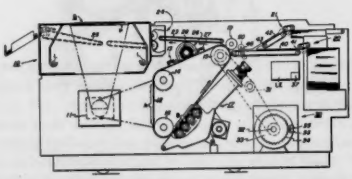
PROCESSING CONTROL DEVICE FOR PRINTING MACHINES

Gilbert E. Koch, Rochester, and Lawrence C. Hubler, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,834

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **5 Claims**



A sheet registration control device utilized in a processing control system for a printing machine of the type having a plurality of processing steps and which utilizes a plurality of con-

trol pulses. A rotary switch actuator in operative conjunction with an adjustably fixed switch is arranged to initiate each working series of control signals for each sheet of paper introduced into machine processing.

3,804,508

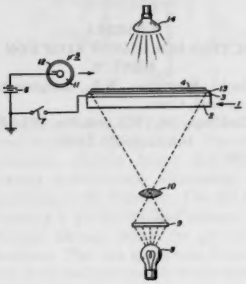
PHOTOELECTROPHORETIC APPARATUS FOR HEAT FIXING AN IMAGE

Vsevolod S. Mihajlov, 175 Farmbrook, and Leonard M. Carreira, 17 Burning Tree Ln., both of Penfield, N.Y.

Division of Ser. No. 12,364, Feb. 18, 1970, Pat. No. 3,705,797, which is a continuation of Ser. No. 808,921, March 20, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 459,860, May 28, 1965, abandoned, and Ser. No. 677,706, Oct. 24, 1967, abandoned, and Ser. No. 677,707, Oct. 24, 1967, abandoned. This application Oct. 2, 1972, Ser. No. 294,423

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **6 Claims**



Apparatus for photoelectrophoretic imaging utilizing thermo-adhesive layers of image transfer and fixing.

3,804,509

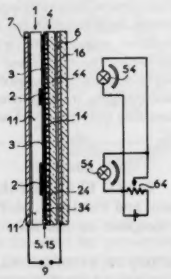
DEVICE FOR PRODUCING ELECTROGRAPHIC IMAGE FROM ORIGINAL PROVIDED WITH A CONDUCTIVITY PATTERN

Costantino Marcus Cantarano, No. 47, Avenue F. Roosevelt, Thiasis 94, France

Division of Ser. No. 870,404, Dec. 8, 1969, Pat. No. 3,721,551, Continuation-in-part of Ser. No. 631,792, April 8, 1967, abandoned. This application Dec. 19, 1972, Ser. No. 316,498

Int. Cl. G03b *21/00*

U.S. Cl. 355—3 R **12 Claims**



The invention provides an electrographic image by generating an electric field across a developer particles layer sandwiched between an original having a conductivity pattern of maximum and minimum conductivities and an image carrier of conductivity intermediate the maximum and the minimum conductivities of said pattern.

3,804,510

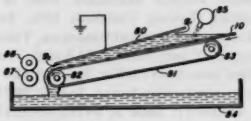
IMAGING DEVELOPING SYSTEM

Masamichi Sato, and Osamu Fukushima, both of c/o Fuji Photo Film Co., Ltd., No. 105, Oaza Mizonuma, Asaka-shi, Saitama-ken, Japan

Division of Ser. No. 110,921, Jan. 29, 1971. This application Mar. 23, 1973, Ser. No. 344,456

Int. Cl. G03g *15/10*

U.S. Cl. 355—10 **14 Claims**



Method and apparatus for forming images by providing an electrostatographic imaging member bearing an electrostatic latent image on a recording surface, positioning the recording surface spaced from and facing a development electrode, contacting the recording surface with toner particles whereby at least a portion of the toner particles deposit on the recording surface to form at least a partially imaged recording surface, and maintaining the field strength of the development electrode weak during the initial period of development and then increasing the field strength of the development electrode during the latter period of development to form a substantially uniform developed image substantially free of streak, halo, edge effect, and background deposits.

3,804,511

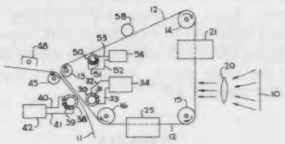
METHOD AND APPARATUS UTILIZING MAGNETIC STORAGE FOR TRANSFERRING GRAPHICAL INFORMATION

Joseph M. Rait, Buffalo; Alexander Scott Gilmour, Jr., Williamsville; Edward C. Sellers, Buffalo, and Robert R. Talley, Snyder, all of N.Y., assignors to Pelorex Corp., Buffalo, N.Y.

Continuation-in-part of Ser. No. 59,185, July 29, 1970, abandoned. This application July 16, 1971, Ser. No. 163,264

Int. Cl. G03g *19/00*, *15/00*

U.S. Cl. 355—17 **25 Claims**



An electrostatic image of graphical information is formed on a surface, for example that of an endless tape, a drum or suitable paper, and then magnetic toner particles are applied to the surface and adhere thereto in correspondence with the electrostatic image. Portions of the same surface, in the case of the tape, or of another surface, when the drum or paper are employed, are magnetized, as determined by the location of the toner particles, to form a magnetic image corresponding to the electrostatic image. Then the toner particles are transferred by friction to a copy medium such as ordinary paper, while the magnetic image is retained or stored on the surface. Toner particles then again can be applied to the magnetic image for production of additional copies. In other embodi-

ments, magnetic material located on a surface in correspondence with graphical information, such as a hard copy comprising magnetic toner particles fixed to a paper substrate, is utilized in magnetizing a surface such as that of a drum or an endless tape, to form a magnetic image of the graphical information. The magnetic image can have toner particles applied thereto for photocopying by transfer to a copy medium such as paper, or it can be scanned to generate a sequential electrical signal indicative of the graphical information which signal is compatible with computer forms of storage and processing.

3,804,512

COPYING APPARATUS FOR SHEET ORIGINALS AND THICKER ORIGINALS

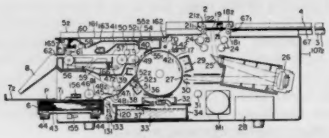
Shigehiro Komori; Hisashi Sakamaki, both of Yokohama; Hiroyuki Hattori, Tokyo; Toshihide Iida, Tokyo; Koichi Miyamoto, Tokyo, and Kazumi Umezawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,820

Claims priority, application Japan, June 9, 1971, 46-48632; June 3, 1971, 46-38917; June 3, 1971, 46-38918; June 10, 1971, 46-41195; June 10, 1971, 46-41196; June 10, 1971, 46-41197; June 21, 1971, 46-44611; Aug. 30, 1971, 46-66740

Int. Cl. G03b *27/32, 27/52*

U.S. Cl. 355—25 **8 Claims**



A copying apparatus for selectively copying sheet originals and thicker originals such as books and the like comprises various process devices as used in an electrophotographic copying apparatus of the type which employs the liquid development and drum type image transfer system. The copying apparatus of the invention includes improvements in such devices as original carriage, original transport apparatus, guide for original carriage, original keep cover, apparatus for controlling the operation of the copying apparatus, apparatus for detecting the amount of toner in developing liquid, copy paper feed apparatus, apparatus for controlling the paper feed apparatus, apparatus for separating copy paper from a photosensitive drum, apparatus for conveying copy paper from the feed apparatus to a discharge port, apparatus for repeating copying operation, apparatus for drying and fixing the image on the copy paper, apparatus for supporting the photosensitive medium, etc.

3,804,513

DEVICE FOR ILLUMINATION IN A COPYING MACHINE

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

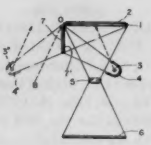
Continuation of Ser. No. 877,735, Nov. 18, 1969, abandoned. This application Mar. 23, 1972, Ser. No. 237,586

Claims priority, application Japan, Nov. 19, 1968, 43-84669

Int. Cl. G03b *27/54*

U.S. Cl. 355—67 **2 Claims**

A device for illuminating an original in a copying machine, comprising one or more planar reflectors disposed in the proximity of edges of an original-holding glass plate of the copying machine. One or more light sources, each corresponding to one of the planar reflectors, are disposed on the opposite side of the corresponding planar reflector with respect to the glass plate. Reflective shades, each corresponding to one of the light sources, are disposed at the back of the corresponding light sources, respectively, to direct light beams to the corresponding planar reflector in such a manner that the reflected light beams from the reflectors become incident to



the original. The reflective shades are so shaped and disposed that they interrupt both light beams directly proceeding to the photosensitive copying paper and light beams producing a ghost image.

3,804,514

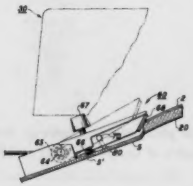
DUAL FUNCTION DOCUMENT STOP FOR A CAPING DEVICE

Stefan A. Jasinski, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 26, 1972, Ser. No. 292,387

Int. Cl. G03b *27/62*

U.S. Cl. 355—75 **5 Claims**



A document stop for locating or registering documents to be copied on the platen of a copying machine, the copying machine being capable of handling continuous length document materials such as computer fanfold as well. For this latter purpose, the copying machine is provided with a form feeder to advance fanfold type document material over the copying machine platen, and a two position cover for the platen, the latter to enable single and fanfold type documents to be accommodated. In this context, the document stop is displaceable to an out of the way position to enable the fanfold type document material to be fed unimpeded over the platen when that type of document is being copied. An end of run or fanfold break sensor is supported on the document stop and is brought into operative engagement with the fanfold type document material when the document stop is displaced, to the out of the way position, the sensor including a control switch to terminate copying in response to either a break in the fanfold or exhausting of the fanfold supply.

3,804,515

DIAZO TYPE COPIER

Carl A. Ackermann, and Patrick F. McPherson, both of Deep River, Conn., assignors to Blu-Ray, Incorporated, Essex, Conn.

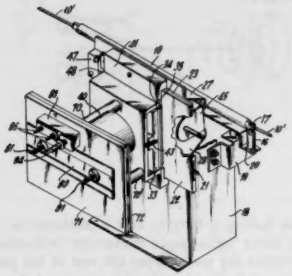
Filed July 30, 1970, Ser. No. 59,553

Int. Cl. G03b *27/04*

U.S. Cl. 355—101 **4 Claims**

The improvement in a diazo type copier of the type having an exposure unit and a developer unit is described wherein the exposure unit includes a receiver for the sensitized film and original, having a window for the passage of ultraviolet energy.

The complete insertion of the film and original and their consequent alignment with the window overcomes a spring bias urging the pair outwardly of the receiver and causes a pressure plate to linearly thrust upon the pair and ensure uniform contiguity. A timer operates an angularly displaceable shutter located as close as physically possible to the ultra-violet source and forming the apex of a light shield. The timer simultaneously maintains the pressure plate in its contiguity urging



position, thereby preventing the emergence of the pair from the receiver due to biased spring thrust. The diazo developer includes a chamber, slightly larger than the film to be developed, having continuously circulating ammonia gas uniformly distributed in the film area. The gas is derived from a container holding a predetermined amount of liquid ammonium hydroxide through which the gas exiting from the chamber is bubbled. The gas is derived from the container above the liquid level and fed directly to the chamber.

3,804,516

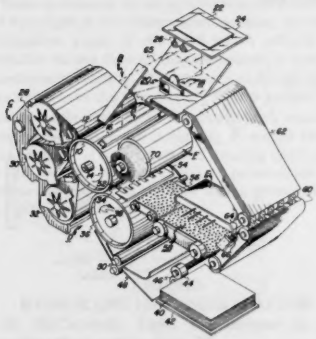
FIRE DETECTING DEVICE FOR A PHOTOGRAPHIC PRINTING MACHINE

John C. De Mott, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1972, Ser. No. 313,922

Int. Cl. G03b *27/00*

U.S. Cl. 355—133 **8 Claims**



A device in which the presence of a burning article on a moving conveyor is detected for preventing the spread of a fire therefrom. The device has at least one temperature sensitive resistance element along the conveyor path which leads from the fusing area of an electrophotographic printing machine for measuring any variation in the temperature along the path produced by a burning sheet. The resistance element is part of an electrical circuit which will generate an ouput signal in response to any variation in the temperature caused by a sheet to warn an operator of a fire in the machine.

The foregoing abstract is neither intended to define the invention disclosed in the specification nor is it intended to be limiting as to the scope of the invention in any way.

3,804,517

MEASUREMENT OF VELOCITY OF A BODY

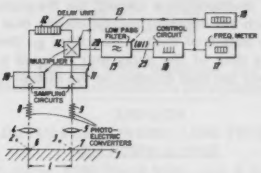
Heini Meyr, Hinterkappelen, and Rudolf Kuhne, Berne, both of Switzerland, assignors to Hasler AG, Berne, Switzerland

Filed May 1, 1972, Ser. No. 249,084

Claims priority, application Switzerland, May 4, 1971, 6464/71

Int. Cl. G01p *3/36*

U.S. Cl. 356—28 **11 Claims**



An apparatus for a moving body and a method for measuring the velocity of that body over a surface arranged parallel thereto and which has local irregular features therein wherein two areas of the surface directly therebeneath are illuminated during movement of the body and optical reflection of the surface areas is received by two photo-electric converters, which are spaced from one another on the moving body and in the direction of motion of the moving body, and which produce two similar electrical signal sequences of the character of noise,but time delayed one with respect to the other. Both signals are sampled, the samples obtained from the leading surface area in the direction of motion is delayed by a controllable amount and thereafter multiplied by the samples obtained from the other surface area. A mean time value is produced from the result of this multiplication and the delay is regulated in such a manner that the delayed and the other signal coincide in time, and the velocity is ascertained as the quotient from the spacing of the two areas and the regulated delay.

3,804,518

MEASUREMENT OF THE VELOCITY OF A BODY

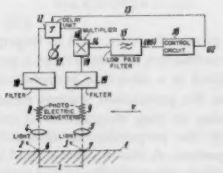
Heini Meyr, Hinterkappelen, Switzerland, assignor to Hasler AG, Berne, Switzerland

Filed May 1, 1972, Ser. No. 249,235

Claims priority, application Switzerland, May 5, 1971, 6677/71

Int. Cl. G01p *3/36*

U.S. Cl. 356—28 **7 Claims**



A device for a moving body, to measure the speed of the moving body over a surface having local irregular features, having sources to illuminate local areas of the surface under a leading and a trailing photo-electric converter on the moving

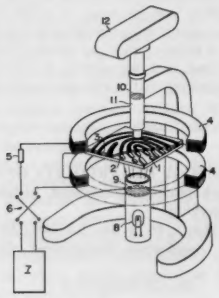
body which produce two sequences of electrical signals which correspond to the irregular feature of the surface at two points running in common with the body, that are spaced one from the other in the direction of movement. A delay unit with an adjustable delay for the signal output of the leading converter, a multiplication circuit for multiplying the delayed signals of the leading converter by the undelayed signals of the trailing converter, a low pass filter connected to the output of the multiplication circuit, a control circuit for adjusting the delay of the delay unit to a value which corresponds to a timely coincidence of the two consecutive signals obtained from the same point at the two inputs to the multiplication circuit, and an indicating device which on the basis of the delay time and the spacing of the two points indicates at any time the relative velocity of the moving body, so characterized that a filter is interposed in the connection between each photo-electric converter and the multiplication circuit, the frequency characteristics of which are different and so chosen that the valves obtained at the output of the low pass filter go through zero, when the delay time of the delay unit is equal to the time required to cover the said distance at the instant of the measurement.

3,804,519

GROUP-OF-CURVES PATTERN IDENTIFICATION APPARATUS

Sadamu Outeru, 5-2 193 Seki Machi, Nerima-ku, Tokyo, and Hiroshi Kobayashi, 3-15 Hankogonei, Kodaira-shi, Tokyo, both of Japan

Filed Mar. 30, 1973, Ser. No. 346,631
Int. Cl. G06k *9/08;* **G01n** *21/40*
U.S. Cl. 356—71 **4 Claims**



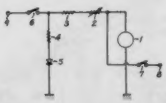
A pattern of a group of curves, such as fingerprints, including noises or discontinuities is formed from a permanent magnet film magnetiized in a direction perpendicular to its surface. Disposed on the permanent magnet pattern is a single crystal plate having an easy magnetization axis only in the same direction as the perpendicular direction of the permanent magnet pattern. A bias magnetic field is controllably applied in a direction perpendicular to the surface of the single crystal thin plate-let to form a figure of magnetic domains in the single crystal thin plate-let in a manner to correspond to the permanent magnet pattern. According to a group-of-curves pattern identification apparatus of this invention the magnetic domains are represented in the form of noise-or or discontinuity-free optical image.

3,804,520

PHOTOMETRIC INDICATION CIRCUIT FOR BATTERY CHECKING

Nobuhiro Noda, Tokyo, and Mitsuhiko Shimoda, Niiza, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 28, 1972, Ser. No. 267,131
Claims priority, application Japan, July 20, 1971, 46-63471
Int. Cl. G03b *17/18*
U.S. Cl. 95—10 C **8 Claims**



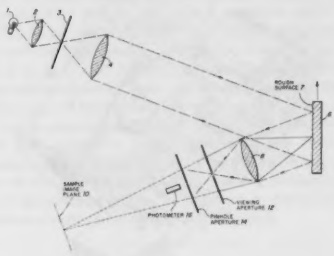
Apparatus having a battery and a photometric indicating circuit, the latter including a meter for indication. A first switch uncouples the meter from the rest of the photometric indicating circuit for battery check purposes. A first serial circuit includes the meter and an impedance. A second serial circuit includes an impedance and a semiconductor element having a variable impedance versus voltage characteristic coupled in parallel circuit relation to the first serial circuit for shunting current around the meter. A second switching circuit selectively couples the battery across the first and second serial circuits, causing the meter to indicate the electrical output from the battery.

3,804,521

OPTICAL DEVICE FOR MEASURING SURFACE ROUGHNESS

Robert A. Sprague, North Chelmsford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Feb. 22, 1972, Ser. No. 228,197
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 **9 Claims**



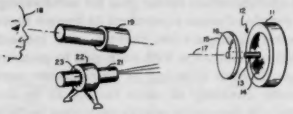
An optical device for characterizing the surface roughness of a sample is disclosed. A source of spatially coherent light having a wide spectral bandwidth is provided together with means to direct light from the source onto the rough surface. Means to image light scattered by the sample's rough surface, such as an imaging lens, are provided in the path of the light scattered by the rough surface. The imaged, scattered light is sensed with a light detector to determine its speckle contrast. Decreases in speckle contrast have been found to be directly relatable to increases in surface roughness, as it is customarily measured by mechanical devices such as profilometers.

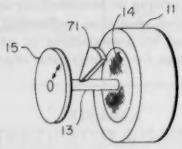
3,804,522

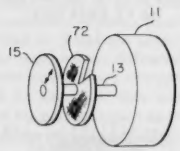
SYSTEM FOR REMOTE READING THE ANGULAR POSITION OF A SURFACE BY DETECTING POLARIZED LIGHT REFLECTED THEREFROM

Jack T. Smith, Sudbury, Mass., assignor to Robert T. Dunn, Bedford, Mass., a part interest

Filed Aug. 18, 1971, Ser. No. 172,757
Int. Cl. G01n 21/40
U.S. Cl. 356—114 2 Claims







An instrument has on its face a retroreflector surface and in front of that a light polarizer which is mounted on the instrument output shaft, so that when the face of the instrument is viewed from a distance at an observation location while illuminated by a light at the observation location, the intensity or the polarization angle of the light which reflects from the retroreflector on the face of the instrument is representative of the instrument reading. The intensity represents the instrument reading where the illuminating light is polarized and the polarization angle represents the instrument reading where the illuminating light is not polarized. A wedge shaped nonreflecting element is located on the rotating shaft in order to expand the angular measurements of polarization direction from half to full circular scale. The wedge gives a coarse indication of the polarization direction.

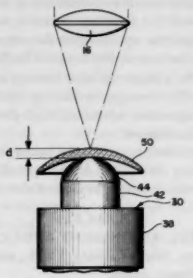
3,804,523

RADIUSCOPE THICKNESS ADAPTOR

Harley G. McCormack, Elgin, Ill., assignor to American Hydrophilics Corporation, Elgin, Ill.

Filed Sept. 29, 1972, Ser. No. 293,407
Int. Cl. G01b 9/00
U.S. Cl. 356—124 4 Claims

The embodiment of the invention disclosed herein is directed to a radiuscope thickness adaptor to be positioned on a support bed of a radiuscope for detecting the thickness of flexible hydrophilic lenses. The radiuscope thickness adaptor is formed of a base member arranged for positioning on the support bed of the radiuscope. A hemispherical polished radius tool element is positioned on the base to be in direct view through the radiuscope. To determine the thickness of a flexible hydrophilic lens a first reading is taken from the surface of the radius tool and then a second reading is taken from



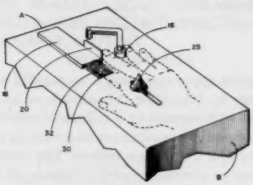
the surface of the lens being measured, and the difference between these two measurements is the thickness of the lens.

3,804,524

APPARATUS FOR CONTROLLING FINGERPRINT IDENTIFICATION

Kenneth P. Jocoy, 1100 Sierra Vista, Apt. 4, Las Vegas, Nev., and Gregory Nanus, 2241 Russell Rd., Las Vegas, Nev.

Filed Aug. 31, 1972, Ser. No. 285,502
Int. Cl. G06k 9/02
U.S. Cl. 356—138 8 Claims



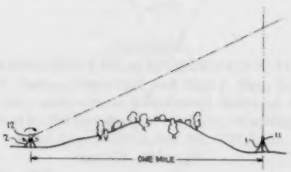
Apparatus for directing and positioning a finger for print identification comprises a window having a surface on which a finger is placed, forwardly moving stop means for determining longitudinal placement of a finger and lateral finger guide means for determining the location of said finger with respect to said window, the first of said lateral guide means being substantially laterally stationary and the second being movable and biased toward said first lateral guide means, and means for directing a hand toward said window.

3,804,525

LONG RANGE LASER TRAVERSING SYSTEM

Louis O. Caudill, Laurel, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed July 14, 1971, Ser. No. 162,380
Int. Cl. G01b 11/26
U.S. Cl. 356—152 8 Claims



The relative azimuth bearing between first and second spaced terrestrial points which may be obscured from each

other by intervening terrain is measured by placing at one of the points a laser source for projecting a collimated beam upwardly in the vertical plane. The collimated laser beam is detected at the second point by positioning the optical axis of a receiving instrument for the laser beam in such a manner that the beam intercepts the optical axis. In response to the optical axis intercepting the beam, the beam is deflected into two different ray paths by a beam splitter having an apex located on the optical axis. The energy in the ray paths is detected by separate photoresponsive elements that drive logic networks for providing indications of:

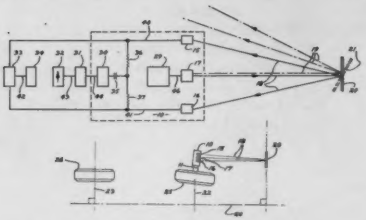
a. the optical axis intercepting the beam;
b. the beam being on the left of the optical axis and
c. the beam being on the right side of the optical axis.

3,804,526

WHEEL ALIGNMENT APPARATUS

John D. McKenney, South Laguna, Calif., assignor to Royal Industries, Inc., Osseo, Minn.

Filed Sept. 18, 1972, Ser. No. 289,960
Int. Cl. G01b *11/275*
U.S. Cl. 356—155 **11 Claims**



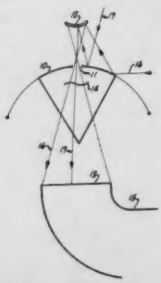
Wheel alignment apparatus using a modulated beam of light or radiant energy to determine the attitude of an operational axis of a vehicle with respect to a reflective reference means. A pair of light responsive sensors are disposed on a device that may be attached to a wheel on a vehicle. The energy reflected to each may then be a measure of the attitude of the wheel or its axis with respect to a reference such as the reflector. Means are provided to indicate when each of the sensors is receiving sufficient light energy to prevent false indication of a predetermined alignment relationship. Means are also provided to modify the sensitivity of the sensors in accordance with the relative distance from a reflective reference.

3,804,527

MEASUREMENT OF RADIATION CONFIGURATION FACTOR

James W. Baughn, Stanford; George A. Monroe, Off Sylale, and August J. Ronsse, Los Altos, all of Calif., assignors to Itek Corporation, Lexington, Mass.

Division of Ser. No. 739,675, June 25, 1968, abandoned. This application June 22, 1970, Ser. No. 59,829
Int. Cl. G01b *11/28, 9/08, 11/24*
U.S. Cl. 356—157 **4 Claims**



Method of and apparatus for measuring thermal radiation geometric configuration factors — any such factor being that fraction of the total radiant energy emitted from an energy-radiating surface which is incident on an energy-receiving surface.

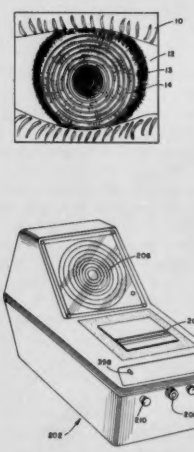
The method includes the steps of forming an image of the projected area of an energy-radiating surface at a selected location along an energy-receiving surface, making a photographic reproduction of such image, repeating the image-forming and image-reproduction steps at a plurality of selected locations along such energy-receiving surface, providing a configuration factor grid for subdividing any such image into weighted areas equivalent to known thermal radiation geometric configuration factors, and inspecting each photographic reproduction with such grid to measure the area of the image thereon in terms of its radiation configuration factor, thereby enabling all such factors to be averaged to derive a value for the entire energy-receiving surface. The apparatus includes an image-forming assembly comprising primary and secondary mirrors of hemispherical configuration for collecting and forming an image of the energy-radiating surface as the area thereof is projected onto the primary mirror, and further comprising an intermediate optical system for receiving such formed image as redirected thereto by the secondary mirror and for transmitting to and focusing such image at an image plane for photographic reproduction.

3,804,528

PRINT PROJECTOR FOR FITTING CONTACT LENSES

Lauren G. Kilmer; McCabe C. Lively, both of c/o Gemco Manufacturing Co., 1826 N. Kingston Pl., Tulsa, Okla., and Alvin E. Reynolds, c/o International Diagnostic Instruments Limited, 3540 E. 31st St., Tulsa, Okla.

Filed June 5, 1972, Ser. No. 259,611
Int. Cl. G01b *9/08*
U.S. Cl. 356—165 **13 Claims**



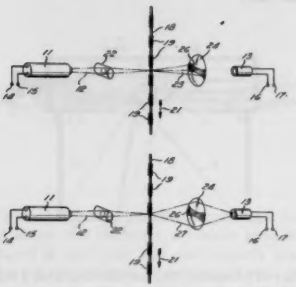
Apparatus for use in the fitting of contact lenses. A positive print of a photograph of the eye of a patient is obtained having superimposed thereon a plurality of concentric circles with diameters having a known relationship to the photograph size. This positive print is placed in the viewer of the present invention and an image of it is projected onto a viewing screen having a plurality of concentric circles thereon. The magnification of the image is adjusted to cause desired relationships between the circles of the screen and the circles of the picture, and an indicator on the viewer shows the base curve and optical zone for contact lenses.

3,804,529

DETECTION BY LASER DIFFRACTION OF FILAMENT COILS WOUND ON A MANDREL

Richard L. Hansler, Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,293
Int. Cl. G01b 11/14
U.S. Cl. 356—167 8 Claims



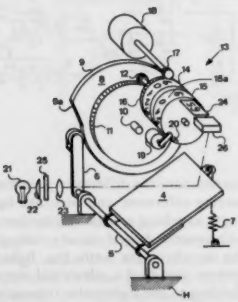
A mandrel wire having spaced-apart coils (such as lamp filament coils) wound thereon is moved, along the mandrel axis, transversely through a laser beam which is directed toward a laser detector. The mandrel causes laterally diffracted laser components to be produced, and when a coil on the moving mandrel is in the laser beam, its turns cause diffracted laser components to be produced in planes parallel to the mandrel. A mask is positioned to shield the detector from the laser beam and from its components diffracted by the mandrel, whereby the detector receives laser energy only from the components diffracted by the coils, thus producing an output signal that is useful for purposes such as counting coils, measuring coil length, and actuating a coil cutter.

3,804,530

OPTICAL INTERPOLATION DEVICE INCLUDING A COUNTER

Walter Kupper, and Bruno Rufenacht, both of Griefensee, Switzerland, assignors to Mettler Instrumente AG, Zurich, Switzerland

Filed Aug. 31, 1972, Ser. No. 285,252
Claims priority, application Switzerland, Sept. 24, 1971, 13951/71
Int. Cl. G03b 21/10; G02b 17/06; G01d 5/04, 13/04
U.S. Cl. 356—170 5 Claims



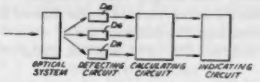
An optical interpolation apparatus including means for interpolating the value of the reading on a scale between a pair of adjacent spaced scale indicia, said optical interpolation apparatus including counter means affording a counting range corresponding with the space between a pair of adjacent scale indicia, and an optical element displaceable between first and second end positions of travel relative to the interpolation apparatus housing in accordance with the instantaneous count of said counter means. The invention is characterized by the provision of means for returning the optical element to its first position each time the counter means exceeds the limits of its counting range. In the preferred embodiment, cam disk and cam follower elements are driven by the counter means to pivot the optical element between its first and second positions, the cam surface of said cam disk containing a ramp return portion for returning the optical element to its first position when the instantaneous count of said counter means is at one of its end limits.

3,804,531

COLOR ANALYZER

Takeshi Kosaka, 239 Higashiasakayama-cho, 2-chome, Sakai, Osaka; Sanjiro Murakami, 3, Komagahagashi-cho, 4-chome, Nagata-ku, Kobe, and Mikio Naya, 24, Yamamichi-cho, 2-chome, Toyakawa, Aichi, all of Japan

Continuation-in-part of Ser. No. 764,081, Oct. 1, 1968, abandoned. This application Mar. 1, 1972, Ser. No. 230,725
Claims priority, application Japan, Oct. 2, 1967, 42-83809; Oct. 11, 1967, 42-6527; Jan. 17, 1968, 43-278; June 26, 1968, 43-54102; July 29, 1968, 43-64948; Aug. 14, 1968, 43-69839; Aug. 23, 1968, 43-72947
Int. Cl. G01j 3/50
U.S. Cl. 356—176 17 Claims



A color analyzer for measuring a color synthesized by the additive mixture of primary colors, each having an arbitrary but constant relative spectral energy distribution. The color analyzer has a light receiving portion consisting of three or more photoelectric transducer elements equal in number to said primary colors and having independent spectral sensitivities, so as to generate electric quantities representing the received optical energy levels, and an electric calculating circuit for generating electric outputs representing the energy levels of said primary colors individually, independently and simultaneously. The color analyzer can also measure the luminance of the light source, and display CIE chromaticity.

3,804,532

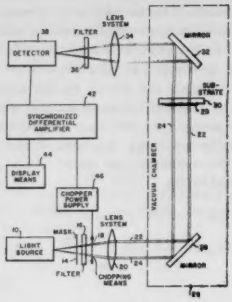
TRANSPARENT FILM UNIFORMITY GAUGE

Raymond A. Patten, Oxon Hill, and Paul P. Bey, Temple Hills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 3, 1972, Ser. No. 277,536
Int. Cl. G01b 9/02
U.S. Cl. 356—108 5 Claims

Apparatus for checking the uniformity of thickness of a thin film during the deposition process comprising means for separating a narrowband light beam into two separate beams

and alternately blocking one or the other; means for projecting the beams through the thin film at two different locations interference effects occuring in each beam; means for detect-



ing the light coming through the film; means for measuring the average value of the two beams, subtracting the difference and averaging the difference; and means for recording the difference.

3,804,533

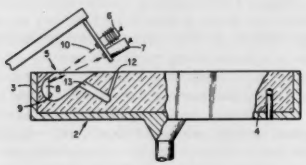
ROTOR FOR FLUOROMETRIC MEASUREMENTS IN FAST ANALYZER OF ROTARY

Charles D. Scott, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 29, 1972, Ser. No. 310,614

Int. Cl. G01n *1/10*

U.S. Cl. 356—197 **6 Claims**



An improved rotor is provided for simultaneously making fluorometric measurements on a multiplicity of discrete samples. A multiplicity of sample analysis chambers or cuvettes are arranged side by side in a circular array to form a rotary cuvette system within the rotor. Each chamber comprises an inclined, open-ended cavity adapted to retain liquids within its radial extremity upon rotation. Surface fluorescence measurements are made while sample liquids are so retained by means of a fluorescence excitation light source and photodetector adapted, respectively, to direct a light beam and detect fluorescence emitted through the open end of the sample analysis chamber. Sample and reagent loading cavities, adapted to be loaded under static conditions, discharge upon rotation through liquid mixing and transfer passageways into respective sample analysis chambers.

3,804,534

DETECTION OF BLEMISHES IN A SURFACE

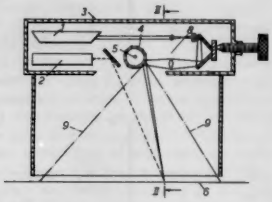
Graham Morley Clarke, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Continuation-in-part of Ser. No. 226,466, Feb. 15, 1972. This application Oct. 25, 1972, Ser. No. 300,568

Claims priority, application Great Britain, Oct. 27, 1971, 49885/71

Int. Cl. G01n *21/32*

U.S. Cl. 356—237 **9 Claims**



A detector of blemishes in a surface includes a scanning station able to move relative to the surface, the scanning station comprising a laser capable of emitting a continuous beam of radiation, optical means for focussing the radiation from the laser such that the radiation intersects the surface as a line extending parallel to the direction of said relative motion, scanning means for causing the beam to scan the surface perpendicular to the direction of said relative motion and detection means, responsive to the detection of changes in radiation diffusely reflected from, or transmitted by, the surface, to produce an output signal. The intersection of the surface by the radiation as a line enables the surface to be moved past the scanning station at an increased speed while permitting a representative proportion of the surface to be scanned by the radiation.

3,804,535

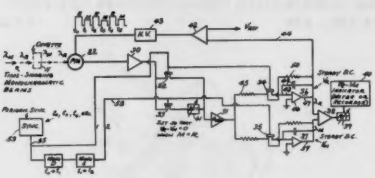
DUAL WAVELENGTH PHOTOMETER RESPONSE CIRCUIT

Rodolfo R. Rodriguez, Silver Spring, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Oct. 13, 1972, Ser. No. 297,279

Int. Cl. G01n *33/16*

U.S. Cl. 356—217 **6 Claims**

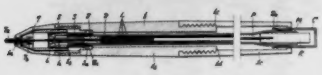


An apparatus to measure the difference in intensity between periodically recurring reference and measure light pulses of different wavelength reaching a photomultiplier tube, the apparatus having alternately keyed steady voltage-generating circuits keyed in synchronism with the light pulses and generating concurrent steady d.c. electrical signals with amplitudes corresponding to the light pulse intensities which are furnished to the respective inputs of a differential amplifier. The output of the differential amplifier is therefore a steady signal representing the difference in intensity between the reference and measure light pulses.

3,804,536
SLIDE TYPE MECHANICAL PENCIL

Osamu Torii; Sugako Torii, both of Kyoto, and Yasuyuki Hashimoto, Hyogo, all of Japan, assignors to Ancos Co., Ltd. and The Skater Fountain Pen Co., Ltd., both of Osaka, Japan

Filed Mar. 24, 1971, Ser. No. 127,492
Int. Cl. B43k 21/16
U.S. Cl. 401—58 5 Claims

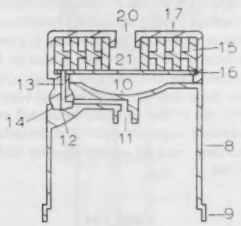


A slide type mechanical pencil, comprising a body having the desired length and diameter, a tubular push-rod slidably accommodated in said body and continuously urged toward the rear thereof. A chuck is supported by said push-rod, a gripping member is fixedly provided in the body opposite the tapered part of the chuck, and a slider is accommodated in the front part of the body in such a manner that it can slide a fixed length. By cooperative working of said chuck,-said gripping member and said slider, automatic exposure of the lead for continuous writing is made possible.

3,804,537
LATHER APPLICATORS

Roger D. Pass, 1119 W. Montana Ave., St. Paul, Minn.

Filed Jan. 25, 1971, Ser. No. 109,186
Int. Cl. A47k 5/09
U.S. Cl. 401—190 2 Claims



An applicator is provided whose broad circular spreading surface is hinged to rotate from a closed perpendicular position to the longitudinal axis of the aerosol container, through successive operable oblique positions, to a parallel position, thereby exposing a valve actuating mechanism whose discharge passage conducts the lather via the hinge to the spreading surface; a portion of the discharge passage to contain an expansion chamber; a portion of the discharge passage adaptable for the housing of a heat transfer device.

3,804,538
APPARATUS AND METHOD OF SHAPING BALL POINT PEN REFILLS

Anthony G. Rosa, 216 Post Ave., Lyndhurst, N.J.

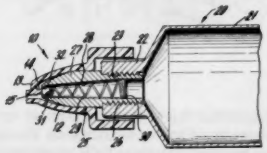
Filed Oct. 6, 1972, Ser. No. 295,604
Int. Cl. B43k 7/00
U.S. Cl. 401—209 5 Claims

The essence of the invention resides in the ability to form varying types of shapes having a radius of curvature in plastic tubing, such as at the rear end of a ball point refill, despite the fact that the plastic material has a memory. The invention comprises the insertion, in the back of the hollow tubular member of a ball point pen refill, a rod having a crimped end which is adapted to be urged against the interior surface of a channel formed in the hollow tubular member. The rod is smaller in diameter than the diameter of the channel so that air may proceed around the rod from the open end of the hollow tubular member and impinge upon ink contained in the hollow tubular member itself. The rear end of the refill tube may be formed in a jig bending the rod into such forms as desired and the rear end of the hollow tubular member will be held in such shape.

3,804,539
DISCHARGE NOZZLE FOR INK MARKING DEVICE

Philip S. Sussman, Orlando, and Francis W. Andrews, Clarcona, both of Fla., assignors to Mark-Tex Corporation, Englewood, N.J.

Filed Nov. 30, 1972, Ser. No. 310,988
Int. Cl. B43k 1/04
U.S. Cl. 401—265 18 Claims



A marking device includes a container filled with a marking fluid and having a neck portion with a bore, a tubular ball-type nozzle positioned in said bore, said ball-type nozzle having a ball seat, a spring mounted in said nozzle and a ball normally urged by said spring against a nozzle seat to act as a valve for the flow of fluid from the container. An over-cap (discharge nozzle) which fits on the ball-type nozzle has a bushing wall portion forming a first chamber, an enclosing wall portion forming a second chamber, a front wall portion having a spur projecting inwardly toward said ball and adapted to urge said ball from its seat, and an orifice within the front wall and offset from the spur.

The over-cap is removably positioned on the ball type nozzle so that its internal spur selectively unseats the ball to permit free flow of the ink.

3,804,540

NIB OF PLASTICS MATERIAL FOR TUBULAR NIB-TYPE PENS

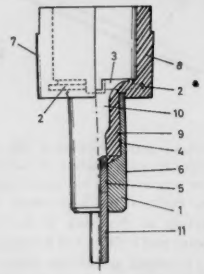
Otto Mutschler, Heidelberg, Germany, assignor to J. S. Staedtler, Nurnberg, Germany

Filed Dec. 1, 1972, Ser. No. 311,125

Claims priority, application Germany, Dec. 6, 1971, 2160387

Int. Cl. B43k *1/06*

U.S. Cl. 401—265 **3 Claims**



In a nib for draftsman's pens and the like of the type employing a nib tube mounted with a clamping or friction fit in a hole in a metallic sleeve surrounding a plastic part of the nib.

3,804,541

ASSEMBLY OF A CONNECTING ELEMENT AND A TORQUE TRANSMITTING ELEMENT

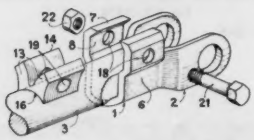
Alfred Pitner, Paris, France, assignor to Nadella, Ruel-Malmaison, France, a part interest

Filed Oct. 5, 1970, Ser. No. 77,911

Claims priority, application France, Nov. 17, 1969, 6939423

Int. Cl. F16d *1/06*

U.S. Cl. 287—53 R **20 Claims**



Assembly of a shaft and a connecting element comprising a split collar of sheet metal having ear portions. The split is wide enough to allow the shaft to pass radially therethrough. An intermediate member is disposed in the split and bears against the shaft. A bolt and nut tightening means extends through the ear portions and the intermediate member co-operates with faces on the ear portions and/or with a face on the tightening means. The arrangement is such that a relative displacement between the ear portions, the intermediate member and the tightening means causes the shaft to be gripped inside the collar.

3,804,542

JOINT CONSTRUCTION

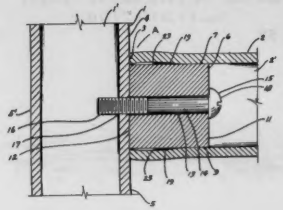
Leo L. Hammerschmidt, 41 Mercury Dr., Florissant, Mo.

Filed Nov. 15, 1972, Ser. No. 306,677

Int. Cl. F16b *7/00, 7/18*

U.S. Cl. 403—264 **4 Claims**

A joint construction for tubular sections as formed from metal or suitable plastics, embodying a block-like connector having a configuration conforming to the geometry of the first tubular section and having exterior dimensions substantially equal to the interior dimensions of the latter for acceptance into the bore of such first tubular section. A fastener, such as a bolt, securing said connector against one side face of the



second tubular section. Protrusion members provided on the exterior side faces of said connector for wall deforming engagement with said first tubular member for maintaining same stably surroundingly of said connector and with its end edge abutting against the aforesaid side face of said second tubular section when in joint formation.

3,804,543

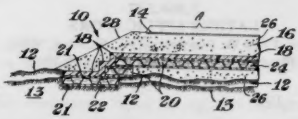
TRAFFICKED SURFACES

John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 112,635, Feb. 4, 1971, Pat. No. 3,722,378. This application Sept. 25, 1972, Ser. No. 291,815

Int. Cl. E01c *3/00*

U.S. Cl. 404—28 **4 Claims**



Trafficked surfaces built on foundations which remain substantially undisturbed during seasonal climatic cycles, particularly in permafrost and near permafrost regions where considerable disturbance of the ground beneath foundations is otherwise common. The foundations include combinations of insulation layers, heat sinks and/or thermal bleeds which dampen and prevent the cyclic climatic seasonal variations from affecting the earthen support under the foundations, in both cut and fill sections, and in embankments and backfills adjacent the sections.

3,804,544

DRILL FEED CONTROL

Ralph D. Adams, 1210 Portola Ave., Escondido, Calif.

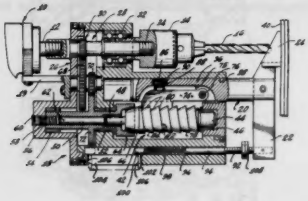
Filed Dec. 29, 1971, Ser. No. 213,683

Int. Cl. B23b *47/20*

U.S. Cl. 408—14 **23 Claims**

Feed control comprises a frame attached to a drill motor and carrying an axially slidable guide shaft with a pressure foot at forward end to contact a work piece to be drilled. A lead screw is carried by the frame and rotatable about an axis parallel to the axis of the drill motor and drill bit. A nut member carried by the guide shaft engages the lead screw and prevents retraction of the guide shaft and relative advance of drill bit toward and into the work piece when axial force is applied. A drive train connected to the lead screw and the drive

shaft rotates the former when the latter is rotated, and enables the nut member to "back off" along the lead screw so that the guide shaft retracts gradually at a predetermined rate and the bit advances at a corresponding rate. Since the bit cannot advance freely and independently, it cannot surge or jam when it



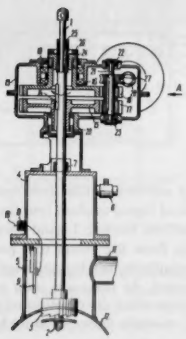
breaks through the rear of the work piece. In preferred form, a clutch is provided in the drive train and actuated by load on pressure foot, which prevents backing off when not actually drilling. Device works in same way when applied to drill press or power feed machines mounted on fixtures or work pieces.

3,804,545

APPARATUS FOR CUTTING HOLES IN WALLS OF PRESSURE VESSELS

Vladimir Semenovich Chistov, Novocheremushkinskaya ulitsa, 41, korpus 1, kv. 39, and Samuil Yakovlevich Novak, Mosfilmovskaya ulitsa, 37, korpus 1, kv. 45, both of Moscow, U.S.S.R.

Filed Sept. 17, 1971, Ser. No. 181,410
Int. Cl. B23b *47/20*
U.S. Cl. 408—101 **1 Claim**



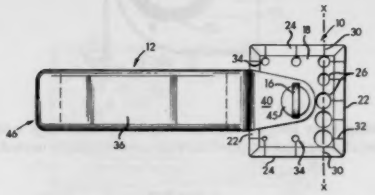
Apparatus for cutting holes in walls of pressure vessels, comprising a cutting tool mounted on a shaft, two gears mounted on the same shaft and featuring different numbers number of teeth; one of said gears is set on the shaft on a sliding key and serves to transmit the torque, while the other imparts axial displacement to the shaft carrying the cutting tool, by means of a screw pair, both gears meshing with corresponding gears of the drive.

3,804,546

DRILL GUIDE

Alfred Z. Boyajian, Manhattan Beach, Calif., assignor to Boyan Limited, Nassau N.P., Bahamas

Filed Jan. 28, 1972, Ser. No. 221,626
Int. Cl. B23b *49/00*
U.S. Cl. 408—115 **3 Claims**



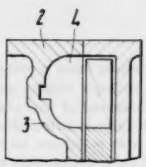
A drill guide for electric hand drills comprising a rigid block containing at least one hole within which a drill is adapted to be supported at a predetermined position with respect to the surface to be drilled and a stabilizing arm in the form of a handle mounted to the block and provided at its distal end with a bearing adapted, when held against a stationary surface spaced from the block, to prevent tilting of the block relative to the surface to be drilled.

3,804,547

LATERAL CANAL PUMP

Walter Hagemann, Itzehoe/Holst, Germany, assignor to Sihi G.m.b.H. & Co. KG, Itzehoe/Holst, Germany

Filed Apr. 28, 1972, Ser. No. 248,549
Claims priority, application Germany, Apr. 30, 1971, 2121280
Int. Cl. F04d *5/00*
U.S. Cl. 415—53 **11 Claims**



A lateral canal pump in which an open screw wheel operates within an open lateral canal with grooved walls having grooves running in a rotary direction so as to influence a circular parallel flow.

3,804,548

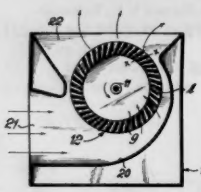
BLOWER CONSTRUCTION

Helmut Hubert, Erda; Anton Ladislaus Jung, Herborn; Manfred Lapczyna, Wetzlar; Erhard Ledwon, Guntersdorf; Wilfried Rock, Herborn, and Gerhard Schmidt-Burbach, Wetzlar, all of Germany, assignors to Buderus'sche Eisenwerke AG, Wetzlar, Germany

Filed Oct. 12, 1971, Ser. No. 188,362
Claims priority, application Germany, Oct. 14, 1970, 2050324; Mar. 12, 1971, 2111914
Int. Cl. F04d *17/00, 29/6, 17/10*
U.S. Cl. 415—54 **8 Claims**

A centrifugal or cross-flow blower has its rotor and/or stator formed from one or more resinous elements of annular cross-

section, such as rings or sleeves, with a multiplicity of generally radial channels, each element being a unitary cellular strip bent into cylindrical shape. Several rings with different channel orientations may be concentrically nested.



3,804,549

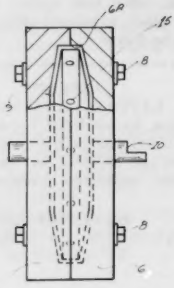
INTERNALLY PROPELLED FLYWHEEL ENGINE

Michael J. Kellenbarger, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,557

Int. Cl. F01d *1/18*

U.S. Cl. 415—80 **1 Claim**



This is an engine whose main moving part is an internally propelled flywheel encased within, and rotating within, a housing assembly consisting of two plate-like side members bolted together, with a power output shaft projecting from the rotor through these side members; said members containing alternating gas input ports and ignition ports arranged in concentric fashion about the shaft so that chambers inside the rotor (perpendicular to the plane of the rotor) are alternately exposed to the ports wherein said chambers receive gas at each gas input port with ignition occuring at each ignition port, and wherein the expanding gas is vented through jets in the housing tangential to the rotor, thus propelling the rotor and its shaft, and driving machinery attached thereto.

3,804,550

CONTROL VANE ARRANGEMENT FOR GAS TURBINE

Geoffrey Arthur Lewis, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

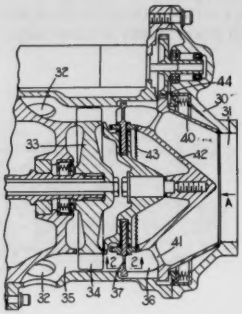
Filed Jan. 12, 1973, Ser. No. 323,237

Claims priority, application Great Britain, Jan. 12, 1972, 1406/72

Int. Cl. F04d *29/56, 15/00*

U.S. Cl. 415—147 **5 Claims**

A control vane arrangement for a turbine has an even number of vanes past which gas flows from the turbine inlet to the rotor. Alternate ones of the vanes are movable in either direction from positions in which they are transverse to the rotor axis and the remainder of the vanes are movable in either direction from positions in which they are parallel to the rotor axis. Movement is simultaneous; and in the aforesaid transverse and parallel positions, gas flow to the rotor is effectively shut off. The vanes pass through the shut-off positions as they are moved to reverse the direction of the rotor.



3,804,551

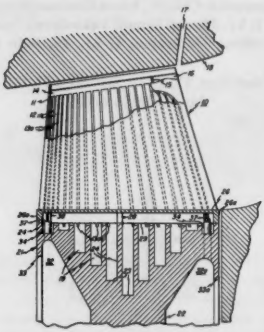
SYSTEM FOR THE INTRODUCTION OF COOLANT INTO OPEN-CIRCUIT COOLED TURBINE BUCKETS

John Moore, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,633

Int. Cl. F01d *5/14*

U.S. Cl. 416—97 **8 Claims**



An improved coolant distribution system is described for the introduction of liquid coolant into the open-circuit cooling channels of a turbine bucket. Liquid coolant is transported by centrifugal force from the gutter to a pool located at the underside of the platform, the liquid entering the pool beneath the surface thereof. At least one weir is formed in the pool periphery for controlled distribution of the coolant from the pool to cooling channels in one or more turbine buckets.

3,804,552

FOUR BLADE MAIN ROTOR CONTROL POWER COUPLING

Cecil E. Covington, Hurst, Tex., assignor to Textron Incorporated, Providence, R.I.

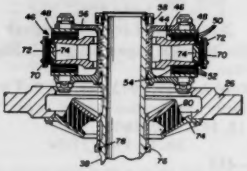
Filed July 5, 1972, Ser. No. 269,114

Int. Cl. B64c *27/52*

U.S. Cl. 416—134 **14 Claims**

Helicopters traveling in level flight are considered to be operating in a one "*g*" condition; that is, the rotor is producing

lift equal to the vehicle weight. In a helicopter equipped with a gimbaled, teetering rotor, which cannot transmit a rotor moment into the mast head, a control moment about the aircraft center of gravity, a requirement to command a change in aircraft attitude, is obtained by tilting the rotor and hence its thrust vector. Thus, the control moment is a function of rotor thrust and tilt angle. When such an aircraft is subjected to a sudden descending maneuver, the rotor thrust will be reduced toward a zero or negative "g" condition. Consequently, the



control moment capability will be reduced to zero and the aircraft becomes uncontrollable. However, the rotor is capable of producing a moment, if cyclic pitch is introduced to the rotor through a normal helicopter control system. This moment may be transmitted across a gimbal, down the supporting rotor mast to exert a controlling moment about the helicopter center of gravity by means of an elastomeric hub spring, connecting the gimbaled rotor hub to the rotor mast. This spring attaches to a first flange as part of the rotor hub yoke, and a second flange bolted to the supporting mast.

3,804,553

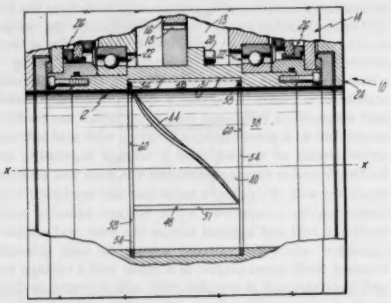
FLUID MACHINE ROTOR

William E. Hickey, Jr., West Hartford, Conn., assignor to The Tec Group, Inc., Bloomfield, Conn.

Filed Jan. 23, 1973, Ser. No. 326,129

Int. Cl. B63h *1/15*; F04d *3/02*

U.S. Cl. 416—177 **14 Claims**



An open-center rotor construction is provided for use in a fluid machine wherein a plurality of separate impeller segments comprising an impeller module are individually removably mounted on an inside rotor wall.

3,804,554

STROKE CONTROL APPARATUS FOR AN HYDRAULIC PUMP

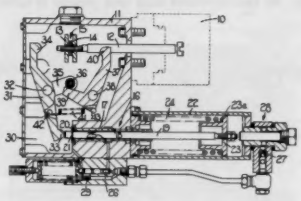
Brian Paul Jones, Huyton, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 13, 1973, Ser. No. 332,207

Int. Cl. F04b *1/26*

U.S. Cl. 417—222 **5 Claims**

A stroke control apparatus for a hydraulic pump whose amount and direction of flow can be varied, comprises an actuating element engaged with a swash plate of the pump, a spring-biassed piston movable in response to pressure at a port of the pump and a lever mechanism disposed between the piston and the actuating element. The lever mechanism comprises a pair of levers. One of the levers has a first abutment engaging the piston, a second abutment for engaging the actuating mechanism and a third abutment. The second lever has a first abutment engaging the third abutment and a second



abutment for engaging the actuating element. A spring between the two levers resiliently urges the first abutment on the second lever against the third abutment and also urges the first abutment on the first lever against the piston. Movement of the piston due to increasing pressure in the pump port causes pivoting of the levers so that one or other of the second abutments moves the actuating element in a direction to reduce the stroke of the pump.

3,804,555

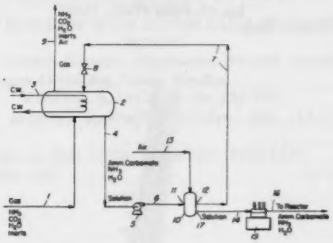
PULSATION DAMPENER FOR HIGH PRESSURE CARBAMATE RECYCLE PUMP AND METHOD OF OPERATION THEREOF

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y.

Filed June 5, 1972, Ser. No. 259,619

Int. Cl. F04b *11/00*

U.S. Cl. 417—53 **14 Claims**



Mechanical failures of pumps adapted to transfer ammoniacal aqueous solutions of ammonium carbamate are avoided or minimized by including a pulsation dampener in the suction line to such pumps. A system for transferring such solutions from lower to higher pressures, and a method for operating the system, are provided.

3,804,556

SLURRY PUMP

Melvin F. Katzer, Danville, and Willis G. Routson, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

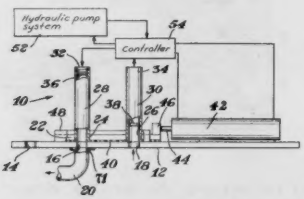
Filed Sept. 28, 1972, Ser. No. 293,116

Int. Cl. F04b *9/08*, *7/00*

U.S. Cl. 417—390 **6 Claims**

The invention is a pump adaptable to pump mud and silt or other slurried material. The pump comprises two cylinders.

While one is pumping, the other is filling with mud. Each cylinder has a piston (preferably floating) in it which separates the mud from the hydraulic fluid. The hydraulic fluid is oil or is essentially water containing soluble oils for lubrication. The hydraulic fluid is pumped out of one cylinder and into the other. This operation draws the floating piston away from one end of the first cylinder, thereby drawing in the mud under vacuum plus the differential barometric head. At the same time an equal volume of hydraulic fluid is pumped into the other cylinder, causing the piston therein to eject mud through a mud line. At the moment that one piston reaches one extreme of its stroke, the other one reaches the other extreme of its stroke. At this same moment, a switching mechanism changes the direction of flow of the hydraulic fluid between the two cylinders. Also, at this same moment, the positions of the two cylinders relative to a discharge line opening are shifted so that the cylinder which has just filled with mud becomes aligned with the mud line to shore and it begins its exhaust stroke. This fluid reversal and shifting will generally take place several times per minute. To change the relative positions of the cylinders and the mud line, the mud line may be shifted from one cylinder to the other, or the cylinders may be shifted while the mud line remains stationary.



3,804,557

SURFACE OPERATED SINGLE TUBE PUMP

Arthur P. Bentley, P.O. Box 139, Boerne, Tex.

Filed May 26, 1972, Ser. No. 257,146

Int. Cl. F04b *17/00, 35/02*

U.S. Cl. 417—402 **2 Claims**

This specification discloses a surface operated single tube pump intended for the raising of oil from the bottom of deep wells, including a small diameter well casing. The pump, considered in its entirety, comprises an air motor located at the ground surface, a tube of a diameter less than that of the well casing, the upper end of which is connected to the air motor, and a bottom pumping unit which is immersed in the oil at the bottom of the well and which comprises a piston slidable in the lower end of a cylinder, a tubular plunger having its upper end connected to said piston with a one-way check valve in the piston controlling the flow of liquid from the plunger through the piston, a spring abutment extending into the bore of the tube below the piston and an expansion coil spring between said abutment and the piston, and a one-way check valve mounted on the lower end of the cylinder for controlling flow of oil from the reservoir into the tube. A valve for bleeding air is mounted on the lower end of the tubular plunger.

3,804,558

ELECTROMAGNETIC PUMP

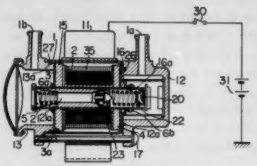
Morikazu Naito, Inazawa, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed Apr. 19, 1972, Ser. No. 245,554

Claims priority, application Japan, Apr. 30, 1971, 46-29321; June 18, 1971, 46/52803

Int. Cl. F04b *17/04*

U.S. Cl. 417—417 **2 Claims**



An electromagnetic pump comprises a pump section including an inlet and outlet chambers adapted to receive fluid therein and separated from each other, and a pump means interconnecting said inlet and outlet chambers. Said pump means has a reciprocating piston so as to deliver the fluid from said inlet chamber to said outlet chamber by the reciprocating motion of said piston. A drive control circuit for actuating said piston to reciprocate is provided in said pump section, wherein said drive control circuit comprises a solenoid for actuating said piston, a feedback coil inductively coupled with said solenoid, a transistor having its collector-emitter circuit connected to a power supply in series with said solenoid and a series circuit of a diode and a voltage regulating unit. Said feedback coil is connected across the base and emitter of said transistor with the polarity such that said transistor is rendered more heavily conductive by a voltage induced across said feedback coil and applied across the base and emitter of said transistor when the current supply to said solenoid is increased. Said series circuit of a diode and a voltage regulating unit is connected in parallel with said solenoid to discharge a counter electromotive force induced in said solenoid.

3,804,559

SUPPORT AND GUIDE MEANS FOR THE FUEL RACK CONTAINED IN A FUEL INJECTION PUMP

Heinrich Staudt, Markgroningen-Talhausen; Eberhard Hofmann, Teilort Neuhof, and Peter Knorreck, Munchingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 22, 1972, Ser. No. 291,181

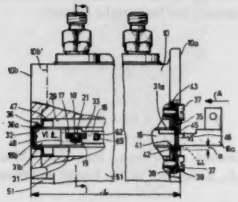
Claims priority, application Germany, Oct. 2, 1971, 2149362; July 22, 1972, 2234197

Int. Cl. F04b *7/04, 39/10*

U.S. Cl. 417—499 **17 Claims**

There is described a multicylinder fuel injection pump wherein the fuel rack which extends within the pump housing and in the length dimension thereof and which, when longitu-

dinally shifted, alters the angular position of each pump piston in its cylinder for varying the effective pressure strokes, is sup-



ported along its entire length by a guide rail of U-shaped cross section held within the pump housing and extending along the entire length thereof.

3,804,560

OIL SHIELD ARRANGEMENT FOR ROTARY PISTON ENGINE

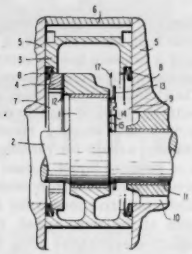
Wolf-Dieter Bensinger, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Oct. 6, 1972, Ser. No. 295,651

Claims priority, application Germany, Oct. 8, 1971, 2150256; June 7, 1972, 2227566

Int. Cl. F01c *21/02*; F04c *27/00, 27/04*

U.S. Cl. 418—91 **23 Claims**



A rotary piston internal combustion engine, especially of trochoidal construction which includes a piston that is rotatingly arranged on the eccentric of an eccentric shaft and rotates relative to the latter and to the housing; the engine further includes engine spaces provided on both sides of the piston hub which are sealed off by oil seals in the radially outward direction; oil is conducted out of the engine space containing a gear for the control of the piston rotation, through the piston into the opposite engine space and from there in the direction toward the lateral housing part; a shielding member is arranged between the hollow gear of the control gearing and the abutment surface at the piston, which projects into the engine space to provide a shielding effect against oil spraying and splashing out of the bearing of the piston onto the eccentric; a further shielding member which is provided in the other engine space, is secured at the end face of the eccentric and projects with a portion thereof that has a spacing with respect to the end face of the eccentric in the axial direction, over the bearing of the piston on the eccentric.

3,804,561

HYDRAULIC CONVEYING APPARATUS

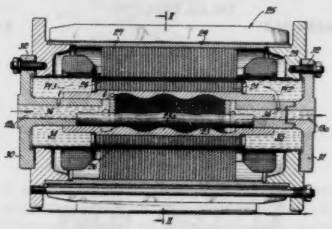
Hermann Kramer, Rotebuckweg 60, 78, Freiburg, Germany

Filed June 20, 1972, Ser. No. 264,601

Claims priority, application Germany, June 24, 1971, 2131305; Mar. 11, 1972, 2211786

Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*

U.S. Cl. 418—96 **38 Claims**



An elongated housing is formed with an axial passage therethrough the surface of which is defined by a helical screw surface. A cylindrical support member with a cross section smaller than that of the passage extends through the latter and engages the surface along a helical line. The support member is formed with a transverse slot therethrough in which a plurality of closely adjacent narrow sealing elements are guided movable in direction transverse to the axis of the support member and engaging with outer ends the passage surface so that during rotation of the support member and the housing relative to each other, a fluid entering the housing at one end may be pumped under pressure through an outlet at the other end of the housing. On the other hand, the arrangement may also be used as a fluid transmission by transmitting a drive to the housing and taking up the drive from the support member, or vice versa.

3,804,562

ROTARY MACHINE WITH ROTOR AXIAL POSITIONING MEANS

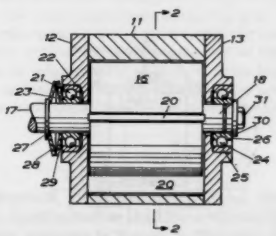
Gunnar Christer Hansson, Stockholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 6, 1972, Ser. No. 295,703

Claims priority, application Sweden, Jan. 14, 1971, 13002/71

Int. Cl. F01c *21/00*; F16c *13/00*; F04c *15/00*

U.S. Cl. 418—107 **14 Claims**



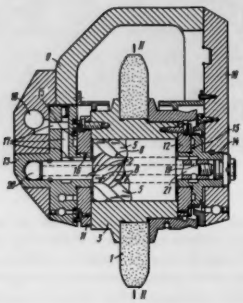
A rotary motor of the sliding vane type is shown. The rotor has two stub shafts rotatably supported in the housing by means of ball bearings. A pile of Belleville springs are braced between a shoulder on one of the stub shafts and its associated bearing so as to bias the rotor into an axial position defined by a counterbalancing ring that is adjustably attached to the other stub shaft by means of a set screw.

3,804,563

SPINDLE ASSEMBLY

Anatoly Sergeevich Konshin, ulitsa akademika Komarova, 9a, kv. 103; Viktor Borisovich Zenkin, ulitsa Bagritskogo, 61, kv. 33; Vyacheslav Serafimovich Zatsepin, Beskudnikovsky bulvar, 50, kv. 28; Vladislav Nikolaevich Arofikin, B.Akademicheskaya ulitsa, 14, kv. 71, and Oleg Nikolaevich Trifonov, Novolesnaya ulitsa, 3, korpus 2, kv. 51, all of Moscow, U.S.S.R.

Filed Feb. 7, 1972, Ser. No. 223,871
Int. Cl. F01c *1/00*
U.S. Cl. 418—164 **5 Claims**



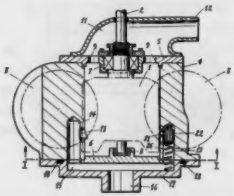
A non-cantilevered cutting tool is mounted in the spindle assembly on a radial support which is made in the form of a helical-tooth spur-gear drive comprising at least two coaxial sun wheels with a provision for relative rotation, and a cage with sockets for the planet pinions which are in constant mesh with at least one sun wheel, said cage forming helical spaces with the teeth of said sun wheel and planet pinions, being sealed at the end by the device for supplying service fluid to said helical spaces at one end of the cage and discharging it at the other end, so that said gear drive functions as a hydraulic motor for rotating the tool secured on the output member of said drive.

3,804,564

GLOBOID-WORM MACHINES FOR VARYING THE PRESSURE OF A FLUID

Bernard Zimmern, 27, rue Delahordere, Neuilly sur Seine, France (92200)

Filed Feb. 28, 1973, Ser. No. 336,640
Int. Cl. F01c *1/08*
U.S. Cl. 418—195 **12 Claims**



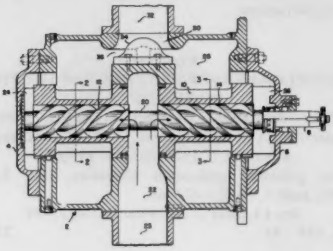
The invention deals with a globoid-worm machine such as a compressor or expansion machine for varying the pressure of a fluid, which comprises a globoid worm having a plurality of threads in meshing relation with at least one transverse pinion and rotatably mounted within a stationary casing which is applied in leak-tight manner against at least part of the external surface of the worm and which has main ports for connecting the interior of said casing respectively to a fluid admission chamber and to a fluid discharge chamber. The casing is provided with a plurality of auxiliary ports which connect the interior of said casing to said discharge chamber and are fitted with movable means for leak-tight closure.

3,804,565

SCREW PUMPS

Morgan B. Sennet, Erwinna, Pa., and Morton K. Bond, Trenton, N.J., assignors to De Laval Turbine Inc., Trenton, N.J.

Filed Sept. 27, 1961, Ser. No. 141,156
Int. Cl. F01c *1/16*
U.S. Cl. 418—201 **10 Claims**



1. A screw pump for liquids comprising a pair of similar screw assemblies each of which includes a plurality of intermeshing screws and a housing having intersecting bores enclosing said screw assemblies and defining for both of said screw assemblies inlet and outlet openings in free continuous communication with the ends of said screw assemblies, said screw assemblies and said housing bores being of types producing theoretically, except for running clearances, continuous discharge of pumped liquid, means providing a common passage receiving liquid flow from both of said screw assemblies, and a common drive means for said screw assemblies operating both at the same speed, the corresponding screws of said respective assemblies being displaced in phase substantially 180° with respect to each other from the standpoint of repetitive phases of discharge operation thereby to effect at least partial cancellation of flow disturbances in said common passage.

3,804,566

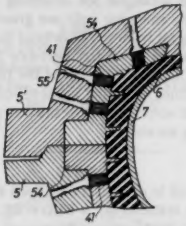
DIE OR MOULD FOR USE IN FORMING A RUBBER OR PLASTIC MATERIAL

Takashi Kimura; Noboru Nakagawa, and Hiroshi Hamamoto, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Aichi-ken, Japan

Filed May 5, 1972, Ser. No. 250,630
Claims priority, application Japan, May 15, 1971, 46-32686
Int. Cl. B29c *1/00*
U.S. Cl. 425—28 **6 Claims**

A die or mould for use in forming a rubber or plastic material, and which includes cylindrical filters as air venting means. The filters include a plurality of linear air venting holes of a diameter of from 0.01 mm. to 0.1 mm., passing therethrough

and are mounted in through-holes penetrating the die or mould body. During forming of the rubber or plastic material



in the die or mould, the air trapped is vented to the exterior of the mould through the filters, and the material being moulded does not clot the air venting holes.

3,804,567

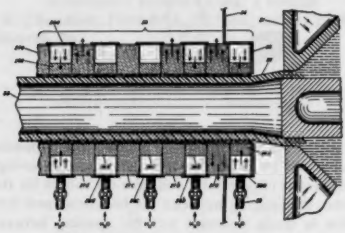
APPARATUS FOR COOLING AND SIZING HOT THERMOPLASTIC EXTRUDATES

Fred M. Recknagel, Clark, N.J., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 23,087, April 6, 1970, abandoned, Continuation of Ser. No. 596,916, Nov. 25, 1966, abandoned. This application May 27, 1971, Ser. No. 147,704

Int. Cl. B29d *7/20*

U.S. Cl. 425—71 **4 Claims**



Apparatus is provided for cooling and sizing thermoplastic extrudates comprising a continuous hollow porous sleeve of eventual shape of the extrudate, said sleeve having a series of adjacent transverse sections, alternating sections thereof being connected to a first liquid coolant system with sufficient pressure to force cooling liquid inwardly and the remaining alternating sections being connected to a second liquid coolant system under sufficient reduced pressure to draw a portion of the cooling liquid outwardly.

3,804,568

INJECTION MOLDING MACHINE WITH ARTICLE REMOVER

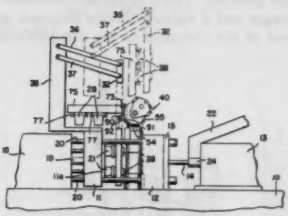
Herbert Rees, Toronto, Ontario, Canada, assignor to Husky Manufacturing & Tool Works Limited, Bolton, Canada

Division of Ser. No. 115,373, Feb. 16, 1971. This application Oct. 24, 1972, Ser. No. 299,854

Int. Cl. B29b *7/10*

U.S. Cl. 42—139 **3 Claims**

A take-off plate insertable from above between the relatively movable mold portions of an injection-molding machine cooperates with a transfer plate cantilevered on a transverse shaft at the top of a column rotatable through 180°. The shaft carrying the transfer plate is coupled by a step-down bevel-gear transmission with a fixed tube surrounding the rotatable column so that this plate turns through 90° during each 180° swing. In its vertical position, the transfer plate confronts the elevated take-off plate and removes from it the newly formed



article or articles extracted from the mold; these articles are held by grippers which are deactivated in a horizontal position of the swung-out transfer plate to release the articles into an underlying receptacle therefor.

3,804,569

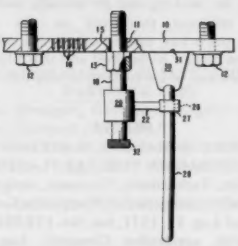
SPINNERET WIPER

Calvin Brooks Walker, Wilmington, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 8, 1972, Ser. No. 287,488

Int. Cl. B08b *13/00;* **B29f** *3/04*

U.S. Cl. 425—225 **2 Claims**



An apparatus for wipe cleaning the extrusion face of a spinneret that includes a post mounted in the center of the spinneret normal to its extrusion face with a bushing mounted to the post for movement toward and away from the extrusion face and for rotary movement about the post. An arm is attached to the bushing and extends outwardly from the bushing toward the orifices. A blade is attached to the arm and the blade has an edge parallel to the extrusion face of the spinneret of sufficient width to encompass the spinneret orifice area in one revolution of the blade around the post.

3,804,570

BLOCK PRESS

Gunter Hoschele, Gerlingen; Eugen Kopp, Stuttgart; Heinz Kroner, Lauffen/Neckar, and Xaver Strobl, Stuttgart, all of Germany, assignors to Werner & Pfleiderer, Stuttgart, Germany

Filed Nov. 2, 1972, Ser. No. 303,284

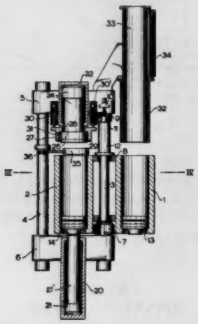
Claims priority, application Germany, Nov. 19, 1971, 2157465

Int. Cl. B29c *3/04*

U.S. Cl. 425—261 **9 Claims**

There is disclosed a press such as a hydraulic press for forming form-retaining blocks by compacting powderized or

fibrous material. The press comprises two pressure containers which are pivotal about a common axis for automatically and selectively placing the containers in a filling position and a compression position, respectively. The bottom of each container consists of a pressure plunger which is slidable in the respective container and can be releasably locked in any selected axial position. There is further provided a second pressure plunger and a vacuum device disposed adjacent to the upper end of the container in the compression position.



Filling of the container in the filling position is effected by extending a feed pipe into the container to be filled. Compacting or compression of the material in a container is effected by moving the two plungers toward each other. The pressure stroke of the second plunger is accompanied by activating the vacuum device for sucking out air initially occluded in the material and released therefrom as the compression progresses. The press has, among others, the advantage that only one vacuum device is required and that filling and compacting operations can be carried out side by side.

3,804,571

APPARATUS FOR MAKING, FLATTENING AND HAULING OFF BLOWN TUBULAR PLASTICS FILM

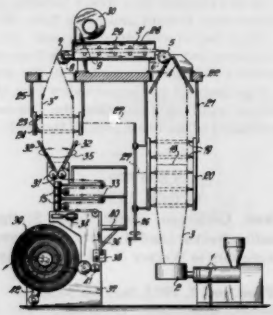
Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Aug. 17, 1971, Ser. No. 172,520

Claims priority, application Germany, Aug. 19, 1970, 2041104; Nov. 16, 1970, 2056292

Int. Cl. B29f *3/00*

U.S. Cl. 425—326 **3 Claims**



An apparatus for making, flattening and hauling off blown tubular plastics film is disclosed which comprises an extruder for producing the film, a vertically upwardly operative blowhead for inflating the film with air, first means for provisionally flattening the film provided vertically above the blowhead downstream of a position at which the film has solidified. Direction changing means including two direction changing rolls are arranged for diverting the film through 180°. The direction changing rolls are grooved to permit the passage of inflating air from the blowhead to the squeeze rolls. Supporting means are provided between the two direction changing rolls for limiting inflation of the film. Second means for flattening the film, including squeeze rolls, are disposed at a spacing from and vertically below the downstream end of the direction changing means.

3,804,572

APPARATUS FOR MAKING TUBULAR PLASTICS FILM BY MEANS OF A BLOWHEAD

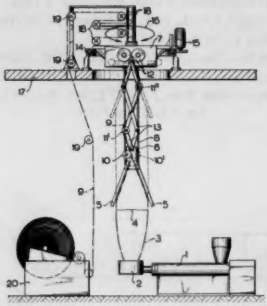
Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Oct. 19, 1971, Ser. No. 190,535

Claims priority, application Germany, Oct. 23, 1970, 2052127

Int. Cl. B29d *23/04*

U.S. Cl. 425—326 R **8 Claims**



In apparatus for making tubular plastics film by means of a blowhead which forms the film as a continuously moving tube, flattening means for the tube and take-off rollers for the flattened tube, the spacing between the blowhead and the take-off rollers is made constant but the spacing between the blowhead and the flattening means is adjustable.

3,804,573

MOLDING APPARATUS

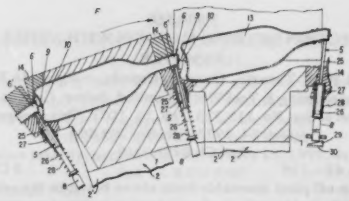
Elio Del Piero, Zaventem, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Filed June 3, 1971, Ser. No. 149,450

Claims priority, application Belgium, June 16, 1970, 90410

Int. Cl. B29d *23/03*

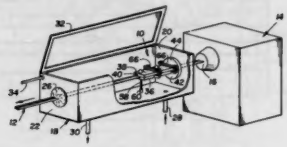
U.S. Cl. 425—387 B **10 Claims**



Apparatus for molding hollow bodies from plastic material by blow extrusion has a rotatable support with a plurality of

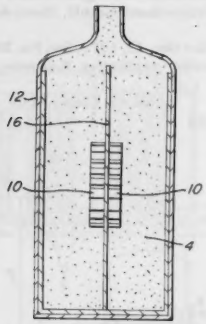
successive, continguous molds arranged thereon, for rotation therewith. Each of the molds has a blowing device and an ejector associated therewith and arranged in the bottom portion of the mold preceeding the associated mold.

3,804,574
APPARATUS FOR SIZING SHAPED ARTICLES
Charles Gatto, 134 Rome St., Bethpage, N.Y.
Filed Dec. 7, 1972, Ser. No. 312,811
Int. Cl. B29c *17/02*
U.S. Cl. 425—388 **9 Claims**



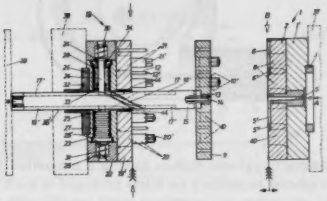
Apparatus for sizing cellular shaped articles in which a sizing fixture having a continuous sized and shaped passage is mounted within a fluid contained vacuum chamber by having one of a plurality of separable parts thereof secured fluid tight to the inside of the chamber and other parts thereof separably connectible with the secured part and thereby automatically positioned for fluid-tight engagement with and within the chamber.

3,804,575
ASSEMBLY FOR MAKING A MOLD
Vijay K. Chandhok, Pittsburgh, Pa., assignor to Crucible Inc., Pittsburgh, Pa.
Filed June 15, 1972, Ser. No. 263,341
Int. Cl. B29c *3/00, 5/00*
U.S. Cl. 425—405 H **1 Claim**



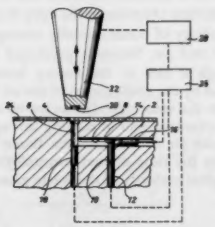
This is a powder metallurgy process for producing a plurality alloy article, for example such as molds and dies. It comprises producing a ceramic core having a surface corresponding to the desired configuration of the mold or die, placing the core in a container and filling the container and surrounding the core with a particle charge of the alloy from which the mold is to be made, heating the charge to compacting temperature and compacting the charge by the application of isostatic pressure to a final density. Thereafter, the ceramic core is removed to expose the corresponding compacted surface of the alloy charge, which is configurated in accordance with the surface of the core and constitutes the desired mold or die surface.

3,804,576
APPARATUS FOR PIVOTING A COMPONENT OR A GROUP OF COMPONENTS OF AN INJECTION MOLD
Karl Hehl, Siedlung 183, D-7291 Lossburg, Germany
Filed June 16, 1972, Ser. No. 263,470
Claims priority, application Germany, June 16, 1971, 2129752; June 28, 1971, 2132089
Int. Cl. B29f *1/00, 1/12*
U.S. Cl. 425—451 **14 Claims**



Apparatus for pivoting a component or a group of components of an injection molding machine about a sector angle not greater than 180°. The apparatus includes a drive shaft mounted with its longitudinal axis coincident with the horizontal axis of symmetry of the mold closing unit. The drive shaft includes two drive grooves formed in its outer surface. A control pin is mounted for engaging the drive grooves for effecting a pivotal movement of the component. The drive shaft is connected to, and serves as a pivot axis for, the component to be pivoted.

3,804,577
APPARATUS FOR MAKING PLASTIC STOPS ON SLIDE FASTENER TAPE
Walter Gaus, Stuttgart, Germany, assignor to Dr.-Ing Josef Ruhrmann, Stuttgart, Germany
Filed May 8, 1972, Ser. No. 251,404
Claims priority, application Germany, May 13, 1971, 2123712
Int. Cl. A61k *17/00*; **A44b** *19/42*
U.S. Cl. 425—510 **6 Claims**



Top stops are made on slide fastener tape either before or after attaching the locking elements by clamping the tape between a titanium die and an anvil formed with recesses which jointly constitute a shaping cavity, a blank of thermoplastic synthetic resin composition being automatically cut from a bar and fed to the recess in the anvil prior to clamping, and being fused in the cavity by a pulse of ultrasonic energy transmitted from the die. The fused resin composition passes through the fabric of the tape to form a boss on both faces of the tape.

3,804,578

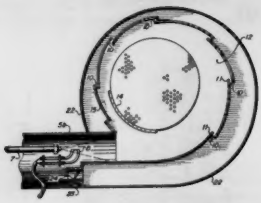
CYCLONIC COMBUSTION BURNER

Donald D. Robbins, 3539 E. Piccadilly Rd., Phoenix, Ariz.

Filed Oct. 10, 1972, Ser. No. 296,308

Int. Cl. F23r *1/00*

U.S. Cl. 431—158 **5 Claims**



A compact cyclonic burner having a tangential fuel input and peripheral secondary air inlets arranged in such a manner that the secondary air combines more readily with the liquid or gaseous burning fuel during the combustion process by aiding the vaporizing, distilling, gasifying and oxidizing of the burning fuel.

3,804,579

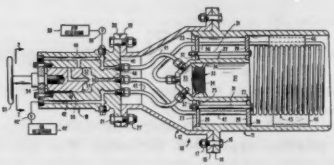
FLUID FUEL BURNER

George M. Wilhelm, 59 Moorland Dr., Scarsdale, N.Y.

Filed June 21, 1973, Ser. No. 372,246

Int. Cl. F23l *7/00*

U.S. Cl. 431—211 **2 Claims**



A fluid fuel burner has a hollow casing within which is a coaxial hollow core member closed at one end and a distributor forming a mixing chamber in the core member which comprises a multiplicity of concentrically arranged axial passages for mixing oil and air. Steam is produced by heating water flowing through a coil in the casing forward of the core member heated by the combustion of the oil with the air and is introduced into the same chamber as the oil and air; it is mixed in the mixing chamber and in passing through the distributor with the oil and air to increase the flame temperature and volume, reduce the ratio of fuel consumption to heat output and burn the great majority of the waste gases.

3,804,580

APPARATUS AND METHOD FOR GENERATING PROTECTIVE ATMOSPHERES

Ivor Sidney Lawrence Golding, Sutton Coldfield, England, assignor to Actric Limited, West Bramwich, Staffordshire, England

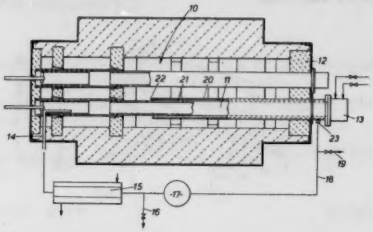
Filed Oct. 24, 1972, Ser. No. 300,355

Claims priority, application Great Britain, Oct. 27, 1971, 49855/71

Int. Cl. F27b *5/04*

U.S. Cl. 432—23 **11 Claims**

A heat treatment furnace having a fuel-fired heating tube is provided with apparatus for producing a protective atmosphere for the furnace, which apparatus comprises a duct for conveying a part of the gas exhausted from the heating tube to a heat exchanger situated outside the furnace. The gas exhausted from the heating tube to the heat exchanger is cooled by the latter, such cooling causing water to condense from the gas. A further tube of larger diameter than the heating tube is arranged concentrically with the latter to provide an annular space along which the de-watered gas is passed into



the furnace chamber. The apparatus further comprises a fuel inlet through which additional fuel can be added to the de-watered gas before the latter is passed into the annular space. While in the annular space, the mixture of de-watered gas and additional fuel is heated and undergoes an endothermic reaction to provide an endothermic atmosphere in the furnace. The apparatus may be operated without addition of fuel to the de-watered gas to provide an exothermic atmosphere.

3,804,581

PROCESS OF THERMALLY TREATING FINE-GRAINED SOLIDS IN AN INTERNALLY HEATED FLUIDIZED BED

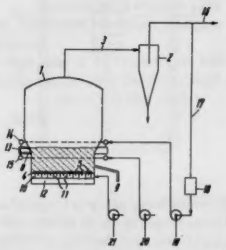
Paul Schmalfeld, Bad Homburg; Burkhard Bock, Duisburg, and Hans-Dieter Schilling, Essen, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Bergwerksverband GmbH, Essen-Kray, both of, Germany

Filed Dec. 13, 1971, Ser. No. 207,193

Claims priority, application Germany, Dec. 16, 1970, 2061829

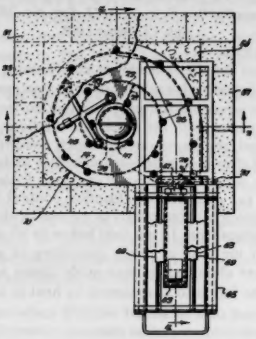
Int. Cl. F26b *17/00*

U.S. Cl. 432—58 **12 Claims**



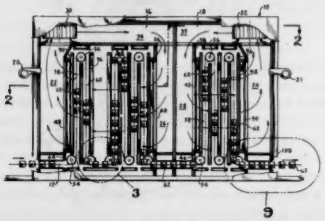
Granular solids are thermally treated in a fluidized bed utilizing internal combustion. The process is carried out in such a way that the hot load can be varied independently of other operating conditions by supplying at least one third of the air supplied to the fluidized bed as secondary air which is fed to the upper half of the height of the fluidized bed below the top level thereof.

3,804,582
FURNACE FOR FIBER PRODUCTION
Raymond C. Vaughan, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed June 9, 1972, Ser. No. 263,732
Int. Cl. F27b 3/18
U.S. Cl. 432—211 13 Claims



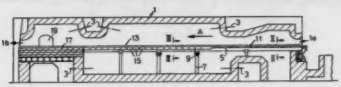
In a melting furnace for materials used in the production of fibers, a channel is formed by a spiral wall attached to the furnace bottom. A fiberizing material which is added at one end of the channel follows a spiral course to the other end of the channel located near the outer portion of the spiral.

3,804,583
BAKING OVEN
Ralph C. Parkes, 2701 N. Hancock, Rydall, Pa.
Filed Feb. 20, 1973, Ser. No. 333,741
Int. Cl. F27b 9/14
U.S. Cl. 432—230 14 Claims



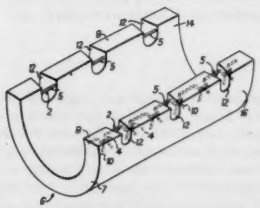
A proofer and baking oven including an enclosure, a conveyor carrying the goods to be baked through the oven and arranged to transport a plurality of baking trays in a series of vertically upwardly and downwardly directed passes through the oven. Heated air intake and discharge nozzles are positioned to direct heated air horizontally through the baking chamber across the vertical passes of the conveyor. Baking trays of generally square cross-sectional configuration and having baking cups on opposed sides are carried through the baking oven by the conveyor. Guide means are provided within the oven interior to hold the baking trays in upright position throughout the paths of vertical travel and horizontal travel and when the conveyor turns about its associated sprockets at the termination of each pass. Each baking tray is provided with endwardly positioned weights which are vertically able and act to retain the desired upright orientation of the baking trays during travel through the oven and further act to jolt the trays for product release following the baking operations when the trays are rotated through 180°

3,804,584
PUSHER FURNACE
Guenter Herr, Oberhausen, Germany, assignor to Koppers-Wistra-Offenbau GmbH, Dusseldorf, Germany
Filed Mar. 12, 1973, Ser. No. 340,006
Claims priority, application Germany, Sept. 23, 1972, 2246772
Int. Cl. F27b 9/14
U.S. Cl. 432—234 10 Claims



An elongated furnace for heat treatment of metallic workpieces which are pushed through the heated furnace chamber along guide means extending from an inlet at one end of the furnace chamber to an outlet at the other end thereof. The elongated guide means comprise metallic elements supported on and in direct contact with water-cooled pipes extending upwardly spaced from the bottom wall of the furnace from the inlet towards the outlet, and a ceramic hearth portion in the region of the outlet and having an upper guide face flush with upper faces of said metallic elements.

3,804,585
PRECAST FURNACE PIPE INSULATION
Thomas James Twort, Greenford, England, assignor to Urguhart Engineering Company Limited, Greenford, England and Bloom Engineering Co., Inc., Pittsburgh, Pa.
Filed July 2, 1973, Ser. No. 375,958
Claims priority, application Great Britain, July 6, 1972, 31811/72
Int. Cl. F27d 3/02
U.S. Cl. 432—234 7 Claims



A refractory insulative member for protecting elongate pipes in a furnace comprises a hollow refractory element into which is solidly embedded a reticulated metal structure. Openings in the refractory element at the longitudinal edges thereof expose portions of a wire rod which can be welded to the pipe to support the member. The wire rods have portions solidly embedded in the refractory element which portions are mechanically linked to the reticulated metal structure.

CHEMICAL

3,804,586

DYEING HAIR WITH AQUEOUS SOLUTION OF NITRO P-PHENYLENEDIAMINES AND COMPOSITION THEREFOR

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Vahan Zorayan, Enghein-les-Bains, all of France, assignors to L'Oreal, Paris, France

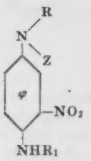
Division of Ser. No. 728,750, May 13, 1968, Pat. No. 3,617,164. This application Sept. 8, 1971, Ser. No. 178,776

Claims priority, application Luxembourg, May 16, 1967, 53676; May 16, 1967, 53677; May 16, 1967, 53678

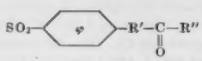
Int. Cl. D06p *3/08*; A61k *7/12*

U.S. Cl. 8—10 **4 Claims**

A keratin fiber dye composition which comprises a solvent and a dyeing amount of a dye compound having the formula :



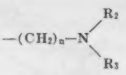
in which R is selected from the group consisting of lower alkyl, hydroxy alkyl, carboxyalkyl, carbethoxyalkyl, carbamylalkyl, haloalkyl, aminoalkyl, aminodialkyl, alkylaminodialkyl, alkyl morpholino, alkyl piperidino, having 1–6 carbon atoms on each mentioned alkyl portion, Z is selected from the group consisting of



in which

R′ is selected from the group consisting of methyl and NO_2, and R″ is selected from the group consisting of hydrogen and lower alkyl, having 1–6 carbon atoms,

and R_1 is selected from the group consisting of lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, and



in which

n is a whole number between 2 and 6 inclusive, and R_2 and R_3, which may be identical or different, are selected from the group consisting of hydrogen, lower alkyl, lower hydroxyalkyl, and with the nitrogen atom adjacent R_2 and R_3 may form morpholino and piperidino, ach R_1, R_2, R_3 having 1–6 carbon atoms on their alkyl portion,

and the process of dyeing keratin fibers.

3,804,587

MOISTURE-AND HIGH-TEMPERATURE TREATMENT OF FABRICS BEFORE FINISHING OPERATIONS

Christian August Meier-Windhorst, Hamburg, Germany, assignor to Artos Dr. Inq. Meier-Windhorst Kommanditgesellscaft, Hamburg, Germany

Division of Ser. No. 151,533, June 9, 1971, Pat. No. 3,695,826. This application Sept. 7, 1972, Ser. No. 287,204

Int. Cl. D06c *1/06*

U.S. Cl. 8—149.1 **1 Claim**

In a process for the finishing or conditioning of textiles in fabric form, including bleaching, dyeing, treatment after printing or final or advanced finishing in which the treated fabric is, after impregnation with the treatment medium, exposed to a heat treatment, the improvement which comprises the fabric to be treated after impregnation and before undergoing a heat treatment to a moisture content, ranging from 10 per cent above to 15 per cent below saturation content in the case of fabrics consisting predominantly of natural or absorbent fibers and which ranges from 10 per cent below to 10 per cent above saturation in the case of fabric consisting of predominantly less absorbent chemical or man-made fibers and thereupon subjecting the fabric to a treatment by heat in a medium consisting of steam or a steam/air mixture under super pressure, the vapor pressure or partial pressure whereof does not exceed 2.5 atmospheres absolute.

3,804,588

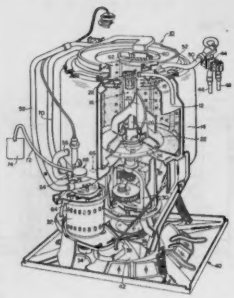
SUDS SAVING SYSTEM FOR AUTOMATIC WASHER

Robert J. Sims, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 75,335, Sept. 25, 1970, Pat. No. 3,695,291. This application Mar. 27, 1972, Ser. No. 238,359

Int. Cl. D06f *38/08*

U.S. Cl. 8—158 **3 Claims**



The instant invention provides an automatic washer which has washing, rinsing and sud saving modes. In the suds saving mode, the wash water is pumped into a supplementary laundry tub for later reuse in the automatic washer to reduce the overall wash water requirements for the washer. A purge or "burp" function is provided for in the automatic washer after the sudsy water has been pumped into the supplementary storage receptacle so as to insure the elimination of suds within the line leading to it and also within the pump. This purging action is accomplished by the pumping of rinse water, for a short time duration, towards the supplementary storage receptacle after the rinse cycle has been completed. By the use of such an extra step with the conventional suds save

mode, the pumping arrangement for the pumping of sudsy water from the supplementary storage receptacle may effectively handle the returning detergent carrying water without being disabled by air locking caused by a large amount of suds initially disposed within the pump or conduit extending to the supplementary laundry tub.

3,804,589

INCREASING DYE FASTNESS OF SOLVENT DYED SOLVENT SCOURED DRIED FABRIC BY STEAMING

Ross R. Dawson, and William H. Leyking, both of Buffalo, N.Y., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 18, 1969, Ser. No. 877,828
Int. Cl. D06p 5/02
U.S. Cl. 8—165 **3 Claims**

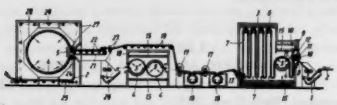
An improved process for dyeing textile fabrics from halogenated hydrocarbon solvents which comprises the steps of dyeing, fixing the dyestuff, scouring the dyed textile, removing scour liquor and subsequently subjecting the dyed textile to an atmosphere of steam, preferably superheated steam, under conditions to prevent condensation of any moisture onto or into the emerging textile, thereby to increase the light fastness and wash fastness of the dyed fabric.

3,804,590

PROCESS FOR THE CONTINUOUS TREATMENT OF THICK, VOLUMINOUS TEXTILE MATERIALS

Heinz Fleissner, Egelsbach near Frankfurt/Main, Germany, assignor to Vepa AG, Basel/Schweiz, Switzerland

Continuation of Ser. No. 662,084, Aug. 21, 1967, abandoned. This application Mar. 20, 1972, Ser. No. 235,907
Claims priority, application Germany, Aug. 20, 1966, 31756
Int. Cl. B05c 9/14; D06c 1/10
U.S. Cl. 8—149.1 **11 Claims**



The present disclosure relates to a process for the treatment of thick, voluminous textile materials such as carpets, plushes, needled felts, and the like, made, for example, of wool, polyamides and polyacrylonitrile fibers. More particularly, the present disclosure is directed to a process for dyeing or printing large widths of thick, voluminous textile materials which comprises applying the dyestuffs and auxiliary agents to the textile material, heat-treating said textile material in a heating-up zone, steam-treating the textile material to set the dyestuffs in a dwell zone, washing the textile material and drying the textile material with hot air.

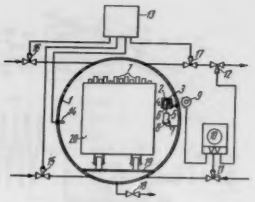
3,804,591

APPARATUS FOR REGULATING PRESSURE INSIDE AN AUTOCLAVE

Konstantin Nikolaevich Bezrodny, ulitsa Arsenieva, 6a, kv. 8, and Vladimir Nikolaevich Voit, ulitsa Pecherskaya, 8, kv. 33, both of Vladivostok, U.S.S.R.

Filed Nov. 10, 1971, Ser. No. 197,294
Claims priority, application U.S.S.R., Aug. 29, 1968, 1266706; Aug. 29, 1969, 1348442
Int. Cl. A61l 3/00; G05d 16/08
U.S. Cl. 21—91 **2 Claims**

Pressure regulating apparatus in which the control maintaining the pressure inside an autoclave equal to the pressure inside containers holding the product being sterilized is connected to the output of the sensor means responsive to the pressure inside these sealed containers. The sensor means includes a probe carrying thereon a source of radioactive radiation and a detector of radioactive radiation. To effect the regulating operation, the probe is made to engage one of the



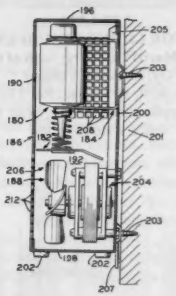
containers being treated. Any displacement of the probe brings about a variation of the value of radioactive radiation being transmitted to the radiation detector, whereby the latter varies the output signal thereof, this signal controlling the operation of the control.

3,804,592

TIMED DROP APPLICATOR

Siegfried Garbe, Canton, Ohio, assignor to The Nilodor Company, Inc., North Canton, Ohio

Filed Feb. 16, 1972, Ser. No. 226,686
Int. Cl. A61l 9/04, 3/00
U.S. Cl. 21—121 **18 Claims**



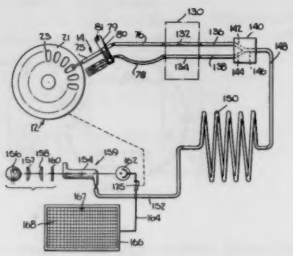
Arrangements for dispensing liquid in droplet form at timed intervals from a receptacle defining a liquid reservoir. The receptacle includes openings at opposite ends thereof defined in part by integral externally threaded neck portions. One of the openings is employed to fill the receptacle and control the venting of the interior of the receptacle to atmosphere, thus to control stopping and starting of drop dispensing. The other of the openings is a dispensing opening including dispensing and timing means through which liquid in the receptacle is dispensed and by which the rate of drop dispensing is controlled. Absorbent material may be supported beneath the receptacle to receive drops dispensed therefrom to facilitate evaporation of the liquid, and fan means may be associated with the receptacle and absorbent material to further facilitate evaporation of the liquid and entrainment of odoriferous vapors from the liquid into the moving airstream caused by fan operation.

3,804,593

AUTOMATIC ANALYSIS APPARATUS AND METHOD

William J. Smythe, Rye, and Morris H. Shamos, New York, both of N.Y., assignors to Technicon Instruments Corporation, Chauncey, N.Y.

Filed May 25, 1964, Ser. No. 369,695
Int. Cl. G01n 31/00
U.S. Cl. 23—230 R 13 Claims



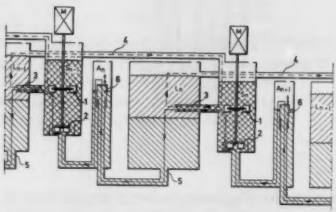
An automatic analysis apparatus includes an indexible table supporting a plurality of liquid sample containers, a stationary reagent liquid container, two off-take tubes, one tube insertable in a presented thereto sample container, the other tube insertable in the reagent container, means for concurrently inserting both tubes repeatedly into their respective containers to provide a flowing stream of segments of liquid sample interspersed by air segments, and a similar stream of segments of reagent. These streams are merged to form stream of liquid and air segments, which stream of liquid and air segments is passed through the sight passageway of a flow cell of a colorimeter. A recorder is coupled to the colorimeter, and may be rendered operational when the sight passageway of the flow cell is fully occupied by liquid.

3,804,594

APPARATUS FOR LIQUID-LIQUID EXTRACTION

Jerker Orjans, and Martti Lamberg, both of Oulu, Finland, assignors to Kemira Oy, Helsinki, Finland

Filed Sept. 8, 1971, Ser. No. 178,729
Claims priority, application Finland, Sept. 9, 1970, 2480/70
Int. Cl. B01d 11/04
U.S. Cl. 23—270.5 2 Claims



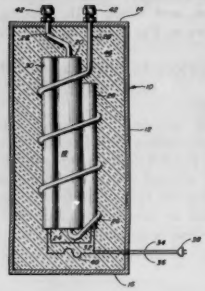
In an extraction apparatus for counter-current liquid-liquid extraction having several horizontally displaced extraction stages, each stage includes a mixing chamber with a mechanical mixer and further a settling basin with an auxiliary space connected to the mixing chamber through an opening or a pipe. From the upper part of each settling basin there runs a flow pipe to the upper part of the mixing chamber of the subsequent extraction stage, the lower part of the settling basin being connected to the lower part of the mixing chamber of the previous stage through said auxiliary space by connection means forming in the auxiliary space a vertically adjustable device, specifically a gooseneck pipe. Said auxiliary space may be situated within the settling basin and to the mixer of the mixing chamber there may be connected additional means promoting the flow of the heavier liquid.

3,804,595

APPARATUS FOR PRODUCING GASEOUS MOISTURE CALIBRATION STANDARDS

David J. Scott, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 29, 1972, Ser. No. 230,429
Int. Cl. B01j 9/04; C09k 3/00; G01n 33/00
U.S. Cl. 23—288 J 2 Claims



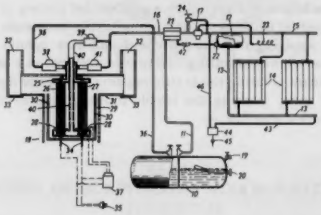
Moisture calibration standards for analytical instruments are produced by passing a gas containing hydrogen and nitrous oxide through a reactor containing a finely divided silver on alumina catalyst that is heated to a constant temperature wherein the hydrogen and oxygen in the form of nitrous oxide are combined to form water vapor in the gas. The reactor is constructed so that the catalyst is contained in a uniformly heated chamber and will provide stoichiometric combination at varying outlet flow rates. A further feature of the reactor is that it is lightweight, easily portable, and can be readily coupled to instruments, such as a hygrometer or other devices for calibration.

3,804,596

CATALYTIC AMMONIA BURNER

Harry C. Fischer, Royal Oak, Md., assignor to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 75,646, Sept. 25, 1970, Pat. No. 3,685,310. This application May 31, 1972, Ser. No. 258,157
Int. Cl. B01j 9/04; F01n 3/14
U.S. Cl. 23—288 R 4 Claims



A catalytic ammonia burner having an insulated housing defining a combustion chamber; a conduit disposed within the housing containing a catalyst for partially dissociating the ammonia vapor; an opening in one end of the conduit communicating with a source of ammonia vapor for passage of the ammonia vapor through the catalyst in the conduit to partially dissociate the ammonia vapor; an aperture at the terminal end of the conduit for discharge of the partially dissociated ammonia; an opening in the housing for the introduction of air

for combustion of the partially dissociated ammonia; and a passageway in the housing for the discharge of combustion products near the inlet end of the conduit such that the combustion products passing adjacent the conduit to the discharge passageway maintains the catalyst at a temperature at which ammonia is dissociated in the presence of the burner. Means are provided for diverting vaporized ammonia in excess of that required to maintain the apparatus at optimum operating temperature from the conduit containing the catalyst to a conduit leading directly to the combustion chamber without contacting the catalyst. The burner is particularly useful in an open cycle in-transit refrigeration system.

3,804,597

EXHAUST EMISSION CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

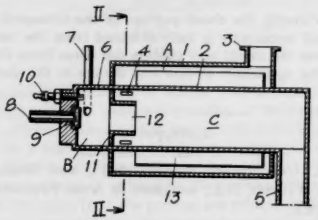
Tokuta Inoue; Kiyoshi Nakanishi, and Kenji Kato, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota City, Japan

Filed Dec. 21, 1971, Ser. No. 210,338

Claims priority, application Japan, Sept. 20, 1971, 46-73135

Int. Cl. B01j 9/04; F01n 3/14

U.S. Cl. 23—288 F **6 Claims**



Exhaust emission control device for an internal combustion engine comprising a chamber for removing oxides of nitrogen having mounted therein at least one catalyst element for removing oxides of nitrogen, at least one exhaust gas intake manifold connecting said chamber for removing oxides of nitrogen with an exhaust gas outlet port of the internal combustion engine, and a recombustion chamber of an afterburner formed in said chamber for removing oxides of nitrogen and provided with an exhaust gas outlet line. Said device further comprises an exhaust gas inlet port formed in a shell of said recombustion chamber for maintaining communication between said chamber for removing oxides of nitrogen and said recombustion chamber, and a vortical flame producing chamber of the afterburner connected to a side of said recombustion chamber at which said exhaust gas inlet port is formed.

3,804,598

PROCESS FOR THE CRYSTALLIZATION OF ALUMINUM NITRATE NONAHYDRATE

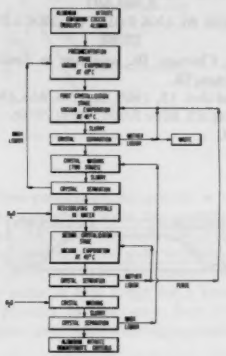
Damon Vernerd Royce, Jr., Little Rock, and Harold Lewis Drown, Benton, both of Ark., assignors to Reynolds Metals Company, Richmond, Va.

Filed Sept. 10, 1971, Ser. No. 179,512

Int. Cl. C01f 7/66

U.S. Cl. 23—305 **17 Claims**

Aluminum nitrate nonahydrate crystals are obtained by crystallization of an impure solution of aluminum nitrate obtained by the nitric acid extraction of an aluminous ore, and which has been substantially freed of its iron content, by providing a slurry of aluminum nitrate nonahydrate crystals in a substantially saturated solution of aluminum nitrate in one or more stages, introducing aluminum nitrate feed solution into said slurry, and removing from the slurry both nonahydrate crystals and excess water in an amount representing the difference between the overall water input to the slurry and the water required to form nonahydrate crystals having an Al_2O_3 content corresponding to the Al_2O_3 values contained in the feed solution, thereby maintaining a substantially constant volume of slurry and a uniform rate of separation of purer nonahydrate crystals. Additionally, or alternatively, such excess water may be eliminated wholly or partly by preconcentrating the aluminum nitrate solution used in preparing the slurry.



Similarly, the process may be employed for treatment of the mother liquor from which such crystals or other forms of crystalline aluminum nitrate have been recovered, so as to further concentrate impurities while providing partially purified nonahydrate crystals suitable for recycling.

3,804,599

SINTERED AG-GRAPHITE-NI METAL CERAMIC MATERIAL FOR MAKING ELECTRIC CONTACTS AND METHOD OF PRODUCING SAME

Andrei Nikiforovich Filippov, Vspolny pereulok, 10, kv. 41, Moscow; Sergei Ivanovich Topilin, Vokzalnaya ulitsa 1, kv. 12, and Lev Abramovich Liberzon, ulitsa Polevaya, 4, kv. 39, both of Elektrougli Moskovskoi oblasti, all of U.S.S.R.

Filed Aug. 19, 1971, Ser. No. 173,233

Int. Cl. B22f 3/16

U.S. Cl. 29—182.5 **2 Claims**

A metal ceramic material for electrical contacts comprises 5–30 percent of silver, 0.5–50 percent of graphite, nickel — the balance.

A method of producing this material consists in that a mixture of the above-mentioned components is subjected to cold pressing under a specific pressure of 2–3 t/cm² and then to hot pressing under a specific pressure of 5–6 t/cm² at a temperature of 400°–450°C during a period of from 10 sec to 1 minute.

3,804,600

SINTERED POROUS IRON ARTICLE IMPREGNATED WITH OLEIC ACID AND AN INHIBITOR FOR FORMING MATCHING SURFACES BY FRICTION

John F. Holman, Ridgway, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Feb. 2, 1973, Ser. No. 329,271

Int. Cl. B22f 3/26; C23f 1/04

U.S. Cl. 29—182.5 **9 Claims**

A process is disclosed for forming relatively moving metal parts with matching surfaces by preparing at least one part from porous sintered iron, impregnating the pores of the sintered iron part with oleic acid containing an inhibitor selected

from Tenemene, BHA, BHT, or MTBHQ in an amount effective to inhibit the reaction between the iron and oleic acid at room temperature and subsequently bringing the parts into sliding contact until the heat developed at points of local high friction is sufficient to effect the reaction between iron and oleic acid. There is also disclosed a formed, porous sintered iron article with inhibited oleic acid in its pores.

3,804,601

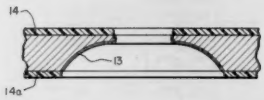
SHADOW MASK BLANK FOR COLOR CATHODE RAY TUBE

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 15, 1969, Ser. No. 866,694

Int. Cl. B21c *37/00*; H01j *29/06*

U.S. Cl. 29—191 **6 Claims**



The aperture mask of a color cathode-ray tube is formed of a blank of annealed steel which has a multiplicity of apertures disposed in a rectangular field. The opposed surfaces of the blank have etchant resistant oxide layers and the walls of the apertures are lined with a flash coating of a material which is resistant to oxidation but is subject to attack by the same etchant that attacks the material of the blank. The apertured blank is used for photographic printing of the screen of the color tube after which it is subject to an etch bath which first removes the liner and then, by attacking the walls of the apertures, enlarges them to a size exceeding the phosphor deposits of the screen. With the apertures enlarged, and with the oxide layers retained, the mask is installed in operative position relative to the screen.

3,804,602

COBALT ALLOY STEEL COMPOSITE ARTICLE

John C. Simoudis, Justice, Ill., assignor to Continental Can Company, New York, N.Y.

Division of Ser. No. 198,269, Nov. 12, 1971, Pat. No. 3,755,887. This application June 6, 1973, Ser. No. 367,677

Int. Cl. B23p *3/00*

U.S. Cl. 29—195.5 **6 Claims**

A method is provided for preparing a cobalt alloy-steel composite article wherein the alloy body is bonded to the steel body with a weld material having a low yield strength, the steel having a coefficient of thermal expansion greater than the cobalt alloy; the weld material, when cooled from the maximum temperature to which the composite article is heated during welding, undergoing a contraction no less than the contraction of the cobalt alloy and no greater than the contraction of the steel.

3,804,603

MANUAL ASSIST TERMINAL APPLICATOR

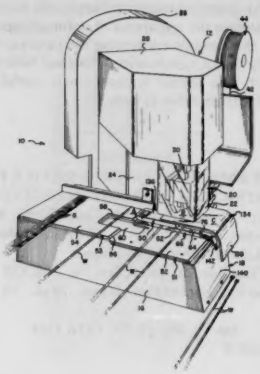
Donald Andrew Wion, Devon Manor, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 3, 1972, Ser. No. 268,339

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 D **15 Claims**

Wires for terminal application are slid at right angles to the wire axis along a support plate with the bared end of the wire in contact with an aligning fence. The wires at their inner ends drop through a narrow slot and fall into a laterally expanded groove within the periphery of a resilient transport belt at the point where the belt is radially distorted. The belt frictionally grasps the inserted wire and moves the same beneath a terminal applicator for automatic termination. The pitch of the slot is coordinated with an intermittent drive mechanism for driving the belt such that wire loading and terminal application occurs during the dwell portion of the transport cycle. The terminal applicator is fully shielded from the machine operator with the shield also guiding the wires from the feed station to the applicator station and thence to the discharge station.



3,804,604

TRANSPARENT CANDLE

Anthony J. Gunderman, Monroe, N.Y., and Richard D. Forshay, Wyckoff, N.J., assignors to Avon Products, Inc., Suffern, N.Y.

Filed Mar. 26, 1971, Ser. No. 128,501

Int. Cl. C10l *5/00*

U.S. Cl. 44—7.5 **10 Claims**

A transparent candle composition comprising a thermoplastic polyamide resin and a flammable solvent therefor capable of solubilizing said resin at a temperature below about 212° F. and of forming with said resin a transparent gel-type structure, said solvent being selected from the group consisting of unsaturated fatty acids, unsaturated fatty alcohols, saturated fatty alcohols, esters of fatty acids with dihydric alcohols and glycerol, and mixtures thereof, and being present in an amount sufficient to gel the resin.

3,804,605

HYDROCARBON FUEL COMPOSITIONS CONTAINING HYDROCARBYL ACID PHOSPHATE SALTS OF AMINO POLYAMIDES

Franklin H. Robinson, N. Brunswick; Marvin S. Rakow, E. Brunswick, and Ernest Jamieson, Highland Park, all of N.J., assignors to Cities Service Oil Company, New York, N.Y.

Division of Ser. No. 77,040, Sept. 30, 1970. This application Oct. 14, 1971, Ser. No. 189,413

Int. Cl. C10l *1/26*

U.S. Cl. 44—66 **7 Claims**

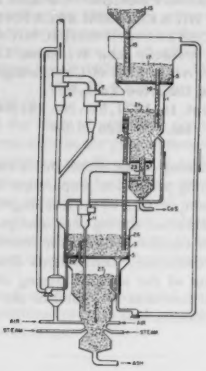
Hydrocarbyl acid phosphate salts of polyamides having at least one amino group and hydrocarbon fuel compositions containing same. The salts are formed by neutralizing with a hydrocarbyl acid phosphate at least 10 percent of the amino groups of a polyamide containing from about 2 to about 6 amide groups and at least one amino group. Hydrocarbon fuel compositions containing these salts exhibit desirable properties such as enhanced carburetor detergency and carburetor anti-icing characteristics, improved water tolerance, excellent rust inhibition, and cleaner engine operation while engines operated thereon exhibit reduced hydrocarbon content in the exhaust.

3,804,606

APPARATUS AND METHOD FOR DESULFURIZING AND COMPLETELY GASIFYING COAL

David H. Archer, Pittsburgh, and Lee E. Brecher, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1972, Ser. No. 216,950
Int. Cl. C10j 3/00, 3/48; F02c 3/26
U.S. Cl. 48—206 6 Claims



A system and process in which coal is desulfurized and completely gasified utilizes a plurality of fluidized beds and the desulfurized gaseous effluent from the system is utilized as a fuel for a combined gas and steam turbine power plant, in which a portion of the pressurized air produced by the gas turbine's compressor is utilized by the coal gasifying apparatus and the hot gases from the process are utilized to dry the coal, producing an economical power generating system which emits a minimum amount of sulfur compounds to the environment.

3,804,607

MOLDED ABRASIVES WITH A BINDER OF A COPOLYMER OF AN UNSATURATED POLYESTER AND AN ETHYLENICALLY UNSATURATED MONOMER

Hans A. Jungell, Bottmingen, Switzerland, assignor to Esterol AG, Basel, Switzerland

Filed July 1, 1971, Ser. No. 159,051
Claims priority, application Switzerland, July 2, 1970, 10048/70
Int. Cl. C08g 51/12
U.S. Cl. 51—298 17 Claims

The Production of Abrasive Articles comprising abrasive grains, an organic binder consisting essentially of the copolymerization product of an unsaturated polyester with one or more polymerizable liquid ethylenically unsaturated monomers.

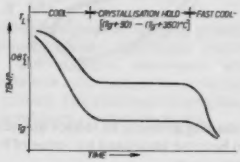
3,804,608

METHOD FOR MAKING GLASS CERAMIC MATERIALS

Philip Hedley Gaskell; Brain Paterson Tilley, both of Prescot; Philip Sidney Irlam, Southport; Robert Percy Miller, Sunbury-on-Thames, and Thomas Ian Barry, Hampton Hill, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed May 23, 1972, Ser. No. 256,168
Claims priority, application Great Britain, May 24, 1971, 16682/71
Int. Cl. C03c 3/22
U.S. Cl. 65—33 16 Claims

The invention relates to a method of manufacturing a fine-grained glass ceramic material from a thermally crystallisable vitreous material, which may be a composition of the SiO_2—Al_2O_3—Li_2O or SiO_2—Al_2O_3—BaO or SiO_2—Al_2O_3—MgO systems containing a nucleating agent such as P_2O_5, ZrO_2 or TiO_2, in which method the material is melted, shaped to a desired form and thereafter supported throughout the subsequent thermal processing, which comprises rapidly cooling the shaped material to a temperature in the range which is



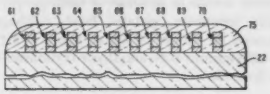
conducive to fine-grained crystal growth in the material and regulating heat extraction from the material while in that range to induce the required degree of crystal growth, and then continuing cooling of the glass ceramic so produced. In some cases it is preferred to hold the temperature at a substantially constant value in that range for a time, generally not more than 30 minutes. In other cases heat extraction may be continued without interruption during crystallisation.

3,804,609

METHOD OF GAS PANEL CONSTRUCTION

Thomas J. Murphy, Rhinebeck, and Donald M. Wilson, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,151
Int. Cl. C03c 17/04
U.S. Cl. 65—59 11 Claims



A new method of constructing a gas panel is described which involves passivation of the outer surface of laminated electrical conductors disposed in parallel on glass plates which form a gas panel, spraying a slurry composed of a finely ground glass frit in a suspension vehicle to cover completely the laminated parallel lines on each glass plate, and firing the assembly in an oven to reflow the glass frit thereby to form a protective glass coating over the laminated parallel lines of each glass plate. The glass plates are formed into a panel by separating them a given distance, placing a sealing material between the glass plates around the periphery thereof, and firing the assembly in an oven to seal the glass plates together with a chamber therebetween which is evacuated and filled with an illuminable gas.

3,804,610

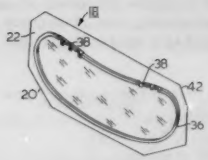
APPARATUS FOR PRESS BENDING GLASS SHEETS

Leo H. Lindberg, Whitby, Ontario, Canada, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 7, 1972, Ser. No. 260,442
Claims priority, application Canada, Nov. 2, 1971, 126675
Int. Cl. C03b 23/02
U.S. Cl. 65—273 8 Claims

A press bending block having a convexly curved shaping surface is provided with a flexible heat resistant cover and means for causing portions of said cover to urge a shaped sheet of glass away from said shaping surface at the end of a

bending operation whereby to reduce any tendency of the shaped sheet to cling to said surface. Provision is also made to



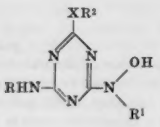
limit the glass shaping pressure to reduce any tendency for the glass surface to become imprinted by virtue of its contact with the heat resistant cover.

3,804,611
SELECTIVE S-TRIAZINE HERBICIDES

Nadezhda Antonovna Volodarskaya, Turistskaya ulitsa, 8, kv. 117, Moscow; Jury Veniaminovich Scheglov, Odintsovsky raion, p/o B. Vyazemy, Institut, 5, kv. 4, Moskovskaya oblast; Irida Alexandrovna Melnikova, Schelkovskoe shosse, 56/72, kv. 10, Moscow; Nikolai Nikolaevich Melnikov, ulitsa D. Ulyanova, 4, korpus A, kv. 96, Moscow; Jury Alexandrovich Baskakov, ulitsa D. Ulyanova, 4, korpus B, kv. 233, Moscow; Leonid Dmitrievich Stonov, Lavrushensky pereulok 17, kv. 21, Moscow; Ljudmila Alexandrovna Bakumenko, ulitsa Gorkogo, 54, kv. 86, Moscow; Asya Mikhailovna Grabovskaya, Sporny pereulok, 5, Ljubertsky Moskovskoi oblasti, and Valentina Grigorievna Kazakova, Beskudnikovsky bulvar, 25, korpus 3, kv. 30, Moscow, all of U.S.S.R.

Filed Dec. 2, 1970, Ser. No. 94,607
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **5 Claims**

Selective s-triazine herbicides for controlling grassy and dicotyledonous weeds in sowings of farm crops, for example, cotton plant, tomatoes, potato, beat, cabbage and other vegetable crops, in which an active agent is 2-(alkoxy-or alkylthio-)-4-alkylamino-6-N-alkylhydroxylamino-s-triazine of the general formula



where: R is alkyl with a number of carbon atoms equal to one to five, X is oxygen or sulphur; if X is oxygen and R^2 is methyl, then R^1 is hydrogen or alkyl with a number of carbon atoms equal to two to four; if X is oxygen and R^2 is ethyl, then R^1 is hydrogen or alkyl with one to four carbon atoms; if X is sulphur, R^1 is hydrogen or alkyl with one to three carbon atoms, then R^2 is methyl, ethyl.

3,804,612
COMBATING NUTSEDGE WITH 1-METHYL-4-PHENYLPYRIDINIUM SALTS

Loren W. Hedrich, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 144,246, May 7, 1971, Pat. No. 3,737,299. This application Apr. 21, 1972, Ser. No. 246,332The portion of the term of this patent subsequent to June 5, 1990, has been disclaimed.
Int. Cl. A01n *9/22*
U.S. Cl. 71—94 **2 Claims**

Nutsedge is combated with quaternary 1-methyl-4-phenylpyridinium salts in which the anion may vary and one or more of a limited number of substituents may be present on the cation. The active agents are toxic only to nutsedge and a few other species when applied post-emergently.

3,804,613
ORE CONDITIONING PROCESS FOR THE EFFICIENT RECOVERY OF NICKEL FROM RELATIVELY HIGH MAGNESIUM CONTAINING OXIDIC NICKEL ORES

Weldon P. Zundel, Golden; John W. Lane, Lakewood, and Melvin L. Taylor, Arvada, all of Colo., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,045
Int. Cl. C22b *23/04*
U.S. Cl. 75—101 R **15 Claims**

Magnesium-containing oxidic nickel ore is conditioned in a closed circuit leaching process in preparation for leaching at high pressure and temperature by preleaching the ore with the final leach liquor obtained during the subsequent high pressure leaching of the conditioned ore, the leach liquor having hydrolyzable acid-consuming constituents dissolved therein which hydrolyze out of the solution during the preleach to generate additional free acid to solubilize the magnesium in the ore during the conditioning step.

3,804,614
HYDROMETALLURGICAL PROCESS

Thomas H. Coffield, Chaumont Gistous, Belgium, and Kestutis A. Keblys, Southfield, Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. Nos. 807,987, March 17, 1969, abandoned, and Ser. No. 55,850, July 17, 1970, said Ser. No. 55,850, is a continuation-in-part of Ser. No. 717,034, March 28, 1968, abandoned, and Ser. No. 807,987,. This application July 27, 1971, Ser. No. 166,642The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.
Int. Cl. C22b *3/00*
U.S. Cl. 75—103 **9 Claims**

A process for winning nickel from source nickel values by reaction with carbon monoxide in the presence of cyanide ion catalyst. The reaction can be run as a solution or slurry of aqueous ammonia, optionally in a two-phase system with a water-immiscible solvent for the nickel carbonyl formed. Associated metal values, such as copper and cobalt, are also separated and recovered by this process.

3,804,615
METHOD OF FORMING STAINLESS STEEL OF IMPROVED DRAWABILITY

Ronald A. Hahn, Lower Burrell, and Edward G. Dubrawka, New Kensington, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 854,271, Aug. 29, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,180
Int. Cl. C22c *33/00*
U.S. Cl. 75—129 **2 Claims**

Described herein is a method of making stainless steel and the stainless steel so produced which possesses improved drawability. The steel contains not more than 6.75 percent nickel and the compositon thereof is adjusted in accordance with a prescribed equation to provide a work hardening rate of 45–85.

3,804,616

ALLOY ON THE BASIS OF PALLADIUM FOR THE MANUFACTURE OF FILTERING ELEMENTS USED IN PREPARATION OF HYDROGEN OF SUPER-HIGH PURITY

Viktor Alexeevich Goltsov, ulitsa Belinskogo, 8/10, kv. 7; Pavel Vladimirovich Geld, ulitsa Mira, 36, kv. 78; Genrikh Efimovich Kagan, ulitsa Komosomolskaya, 50, kv. 77; Nikolai Ivanovich Timofeev, prospekt Lenina, 62, korpus 5, kv. 17; Ivan Filippovich Belyaev, ulitsa Malysheva, 7, kv. 8; Viktor Alexandrovich Mitjushov, ulitsa Moskovskaya, 49, kv. 67, and Saule Khuryatbekovna Kurumchina, pereulok Vstrechny, 7, korpus 1, kv. 44, all of Sverdlovsk, U.S.S.R.

Filed Jan. 8, 1973, Ser. No. 322,190
Int. Cl. C22c *5/00*
U.S. Cl. 75—172 G **2 Claims**

An alloy on the basis of palladium for the manufacture of filtering elements used in the preparation of super-high purity hydrogen by diffusion purification of technical hydrogen or isolation of hydrogen from hydrogen-containing gaseous mixtures, consisting of palladium (43–89 per cent by weight), silver (10–26 per cent by weight), gold (1–26 per cent by weight), ruthenium (0.1–0.9 per cent by weight), aluminium (0.1–2.0 per cent by weight), and platinum (0.1–2.5 per cent by weight).

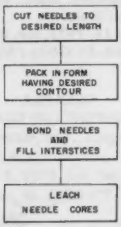
The proposed alloy has increased permeability toward hydrogen in combination with high mechanical stability during operation in hydrogen medium.

3,804,617

PROCESS FOR BUILDING MOLDS TO PRODUCE PILE MATERIALS

Robert M. Conklin, Scarsdale, N.Y., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 5, 1972, Ser. No. 215,556
Int. Cl. B22f *7/08*
U.S. Cl. 75—208 R **6 Claims**


CUT NEEDLES TO DESIRED LENGTH
PACK IN FORM HAVING DESIRED CONTOUR
BOND NEEDLES AND FILL INTERSTICES
LEACH NEEDLE CORES

A process for building a pile making mold by bonding a plurality of tubes or needles into a matrix, as well as the mold, are disclosed. The use of tubes to make a mold permits the selection of a wider variety mold and pile dimensions than can be obtained with conventional methods of forming cavities in a mold surface. A pile material made by this process is also described.

3,804,618

LIQUID CRYSTAL IMAGING SYSTEM

Edward Forest, and Carol K. Keller, both of Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 16, 1967, Ser. No. 646,532
Int. Cl. G03g *13/22*; **G02f** *1/16*
U.S. Cl. 96—1 R **17 Claims**

An imaging system wherein a liquid crystal composition is placed in an imagewise field. Molecular orientation within the liquid crystal in areas of field provides a visible image.

3,804,619

COLOR ELECTROPHOTOGRAPHIC IMAGING PROCESS

Joseph Mammino, Penfield; Franklin Jossel; James M. Kobey, both of Rochester; John P. Serio, Webster; Warren E. Solodar, Rochester, and Alan H. Walker, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1972, Ser. No. 316,144
Int. Cl. G03g *13/08*
U.S. Cl. 96—1.2 **7 Claims**

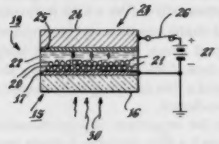
A color electrophotographic imaging process is disclosed employing uniquely distinct developer materials. Specific cyan, yellow, and magenta developers which uniquely cooperate to form true color images in an electrophotographic process are described. The electrophotographic processes employing these developers are also disclosed.

3,804,620

METHOD OF PRODUCING PLANOGRAPHIC PLATES BY PHOTOELECTROPHORETIC IMAGING

John B. Wells, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 104,388, Jan. 6, 1971, abandoned. This application Dec. 1, 1972, Ser. No. 311,072
Int. Cl. G03g *13/00, 5/02*
U.S. Cl. 96—1.3 **6 Claims**



Planographic masters are prepared by contacting a suitable substrate with a layer of an imaging suspension including a dispersion of inert particles in an insulating carrier liquid. The imaging suspension is subjected to an electrical field and exposed to a pattern of electromagnetic radiation to which an electrically photosensitive vehicle is responsive for transferring charge to the inert particles. An image is formed on the substrate as a result of the migration of inert particles under the influence of the applied field.

The substrate may be hydrophilic in which case oleophilic inert particles are used or the substrate may be oleophilic in which case hydrophilic inert particles are used.

3,804,621

NEGATIVE OR POSITIVE WASH-OFF RELIEF SYSTEMS

Maurice D. McIntosh, Willoughby, Ohio, assignor to M. D. McIntoch & Co., Willoughby, Ohio

Filed May 25, 1967, Ser. No. 641,113
Int. Cl. G03c *5/00, 1/64*
U.S. Cl. 96—36 **12 Claims**

A wash-off relief system in which the residual portion of the light-sensitive gel coating exposed to a copy image may be either the light-struck (negative image) portion or the non-light-struck (positive image), at the option of the user. The

coating includes a mixture of ferric double salts which, alone, normally do not insolubilize the gel coating, and ferric single salts which normally insolubilize the gel coating. To obtain a continous coating, the mixed salts are dispersed in the gel material in the presence of a volatile solubilizer (acid) sufficient to offset the insolubilizing effect of the ferric single salts, the solubilizer leaving the film coating during drying to provide a substantially insolubilized light-sensitive gel coating prior to exposure.

Negative images are developed in a developer solution containing hydrogen peroxide and an acid (or a peroxide former and an acid) prior to wash-off. Positive images may be left by wash-off without use of a developer, but in some formulations, a positive developer solution containing salts of acids which solubilize the gel coating and salts of alkaline earth metals (particularly strontium and barium) may be used to aid wash-off.

3,804,622

METHODS OF PRODUCING HALFTONE POSITIVE FILMS

Michael J. Bergin, Bayside, N.Y., assignor to Intaglio Service Corporation, Long Island City, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,030
Int. Cl. G03f *5/00*
U.S. Cl. 96—38 **10 Claims**

A method of producing halftone positive films for use in preparing gravure cylinders or plates for use in gravure printing in which selected line copy of the original copy is photographed on a photosensitive film which is developed to produce a film carrying a sharp negative image, from which a film carrying a developed sharp positive image may be produced. From either of these films a film carrying a developed spread positive image and a film carrying a developed spread negative image may be produced.

According to the invention, if a photosensitive film is exposed, first through a film carrying a sharp image, negative or positive, and then through a film carrying a spread image of opposite polarity, i.e., positive or negative, respectively, and through a very fine negative halftone screen, a very fine halftone screen pattern will be produced within the unexposed narrow border areas surrounding the margins of the sharp image which result from the difference in dimensions between the sharp and spread images. This very fine screen pattern results in extremely sharp edges of the image produced in the developed film.

3,804,623

PHOTOGRAPHIC REFLEX PROCESS

Hollis E. French, North Chelmsford, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 721,160, April 15, 1968, abandoned. This application Aug. 20, 1971, Ser. No. 173,674
Int. Cl. G03c *1/00*
U.S. Cl. 96—47 **7 Claims**

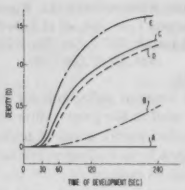
This disclosure relates to a method of making a reflex copy of a master by reflex exposing to visible light a slightly sensitized photoconductive medium comprising a reflective photoconductor not normally sensitive to visible light. The photoconductor is rendered chemically reducing by this exposure at areas corresponding to non-image areas in the master. To obtain a positive image, the developed reflex-exposed medium may be used as a master and again reflex exposed using the same process to obtain a positive image.

3,804,624

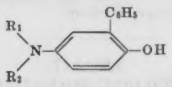
METHOD FOR DEVELOPING SILVER HALIDE PHOTOSENSITIVE MATERIAL

Atsuaki Arai; Kinji Ohkubo; Tatsuya Tajima; Mitsugu Tanaka, and Yoshinori Tsuchiya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1971, Ser. No. 192,951
Claims priority, application Japan, Oct. 27, 1970, 45-94868
Int. Cl. G03c *5/30, 1/06*
U.S. Cl. 96—66 R **17 Claims**



It is disclosed that the use of



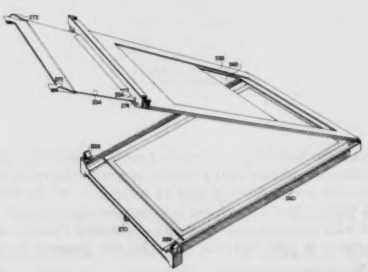
wherein R_1 and R_2 are each alkyl groups having 1 to 4 carbon atoms improves the photographic developing characteristics of hydroquinone.

3,804,625

PHOTOGRAPHIC FILM UNIT CASSETTE

Duncan C. Sorli, Chelmsford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 12, 1972, Ser. No. 252,567
Int. Cl. G03b *17/26*
U.S. Cl. 96—67 **7 Claims**



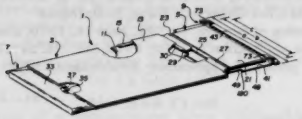
A film holding cassette adapted to be used in conjunction with a film unit and drum processor to form a system for processing large format, self-developing film units. The cassette includes first and second members which are pivotally mounted relative to each other for holding a sheet of film therebetween in a light-tight manner, and a latching element for securing the first and second members to one another and for releasably securing the leader tab of the film contained in the cassette to one of the members.

3,804,626

PHOTOGRAPHIC FILM UNIT

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,932
Int. Cl. G03c 1/48
U.S. Cl. 96—76 C 27 Claims



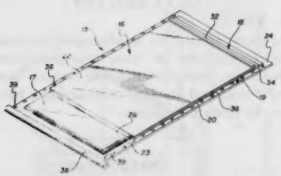
A self-processing film unit including an image-recording section, a container for supplying a processing fluid to the image-recording section, and a resiliently flexible carrier permanently attached to the container and separably coupled at its trailing end to the leading end of the image-recording section. The carrier and container are especially adapted to be separated from the image-recording section by deflecting fenders that are spaced in a cooperating camera to engage the lateral edges of the carrier and to bend the carrier with its container into an arcuate path of movement diverging from the image-recording section. The carrier is notched in both lateral edges at its trailing end, which provides a skirt of reduced transverse dimension that will straighten from the arcuate path and move between the deflecting fenders at approximately the same time the carrier and container are separated from the image-recording section. Thus, the carrier will move itself and the container under the forces of the carrier's own resiliency to a position where it will not interfere with similar movement of a next successive film unit, and preferably to a generally flat position in a waste-collecting chamber of the camera or a corresponding cartridge in which the film unit was supplied.

3,804,627

FILM HANDLING IMPROVEMENT

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,940
Int. Cl. G03c 1/48
U.S. Cl. 96—76 C 13 Claims



A self-processing film unit is provided at its leading end with a transverse stiffening bar to facilitate handling of the film unit in photographic processing apparatus. The bar is adapted to be engaged by a film feeding member in the apparatus to move the film unit into the nip between a pair of processing members. The bar also prevents undesirable transverse flexing of the leading end of the film unit when it is directed longitudinally in an arcuate path after passing through the processing members.

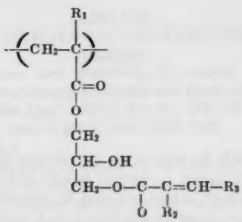
3,804,628

PHOTOSENSITIVE COMPOSITIONS COMPRISING A PHOTOSENSITIVE POLYMER AND A PHOTOCHROMIC COMPOUND

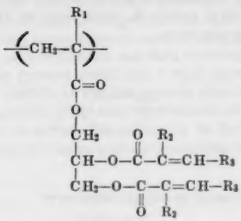
Chiaki Osada; Masato Satomura, and Hisatake Ono, all of Osaka, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed June 23, 1972, Ser. No. 265,888
Claims priority, application Japan, June 23, 1971, 46-45382
Int. Cl. G03c 1/70
U.S. Cl. 96—90 PC 34 Claims

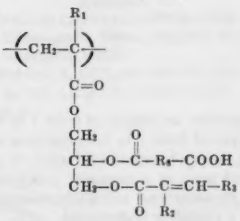
A photosensitive composition comprising (1) a photosensitive high molecular weight compound having therein at least one of the units represented by the following general formulae (I) to (V)



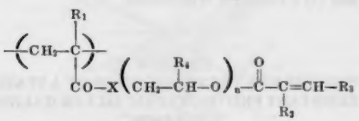
(I)



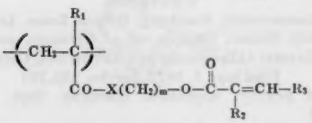
(II)



(III)



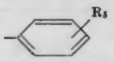
(IV)



(V)

wherein R_1 represents a hydrogen atom or a methyl group; R_2 represents a hydrogen atom, a cyano group or a -COOR group

in which R represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms; R_3 represents a



group, a

group, a

group, or a

group in which R_5 represents a hydrogen atom, a halogen atom, a nitro group, a methyl group, and ethyl group, a methoxy group or an ethoxy group; R_4 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, or a halogenated alkyl group; R_6 represents a-CH_2-CH_2- group, a-CH=CH-group, or a

group; X represents an oxygen atom or a

group; n represents an integer of from 1 to 4; and m represents an integer of from 1 to 6, comprising a homopolymer of said units, a copolymer of said units, or a copolymer of said units and units of a monomer copolymerizable therewith; (2) a photochromic indolinobenzospiropyran derivative; and (3) a sensitizer is disclosed.

3,804,629

PROCESS FOR THE PRODUCTION OF A STAIN-RESISTANT PHOTOGRAPHIC SILVER HALIDE EMULSION

Hanns Hammerstein, Hamburg; Helmut Reuss, Leverkusen, and Erik Moisar, Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 5, 1972, Ser. No. 286,291

Claims priority, application Germany, Sept. 3, 1971, 2144127

Int. Cl. G03c *1/02, 1/72*

U.S. Cl. 96—94 R **3 Claims**

The stability of silver halide emulsion layers against the deleterious effect of dust in particular metal dust is improved by adding to the physically ripened and washed emulsion before chemical ripening a silver chloride emulsion or by precipitating silver chloride on to the physically ripened and washed silver halide emulsion.

3,804,630

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL CONTAINING AZO DYES

Hansrolf Loefeel, Berne; Bernhard Piller, Marly-le-Petit, and Alfred Froehlich, Marly-le-Grand, all of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

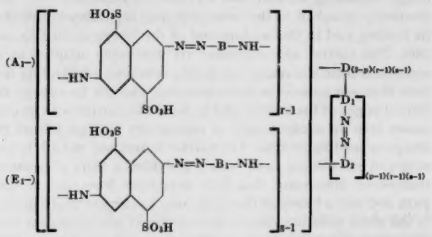
Continuation of Ser. No. 46,798, June 16, 1970, abandoned. This application June 30, 1972, Ser. No. 267,779

Claims priority, application Switzerland, Sept. 1, 1967, 12299/67

Int. Cl. G03c *1/10*

U.S. Cl. 96—99 **13 Claims**

Photographic, light-sensitive material, especially for the silver dyestuff bleaching process is provided. This material is characterized in that it contains on a support in at least one layer a linear acylamino azo dyestuff of the formula



wherein B and B_1 are aromatic radicals, A_1, D_1 and D are acyl radicals, D_1 and D_2 each is a monocyclic radical bonded to the -NH-groups by an acyl group, *p*, *r* and *s* each are 1 or 2, the sum of *r* and *s* being at least 3 and the number of azo groups present in the molecule being $(r-1)+(s-1)+(p-1)(s-1)$. This material contains these dyestuffs especially as yellow image dyestuffs. The dyestuffs have favorable absorption properties, are fast to diffusion and have good resistance to oxidizing agents.

3,804,631

PHOTOPOLYMERIZABLE COPYING COMPOSITION

Raimund Josef Faust, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 27, 1971, Ser. No. 212,668

Claims priority, application Germany, Dec. 28, 1970, 2064080

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 **8 Claims**

This invention relates to a photopolymerizable copying composition comprising at least one polymerizable compound, at least one photoinitiator and at least one copolymer of methacrylic acid and an alkyl methacrylate having an alkyl group of four to 15 carbon atoms.

3,804,632

METALLOBORANES AS FOGGING AGENTS IN DIRECT POSITIVE EMULSIONS

John H. Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 15, 1972, Ser. No. 226,549

Int. Cl. G03c *1/28*

U.S. Cl. 96—108 **11 Claims**

Direct-positive photographic elements having good sensitometric characteristics and aging stability are prepared by

incorporating in the silver halide emulsion from 10^{-6} to 10^{-4} mole per 1.5 moles of silver nitrate of at least one metalloborane as a chemical fogging agent selected from the group containing the metals, platinum, nickel, cobalt, rhenium, iron or silver in its structure.

3,804,633

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kenro Sakamoto; Isamu Fushiki; Fumio Shimizu, and Katsutoshi Tozawa, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

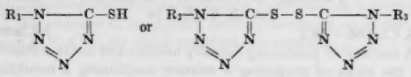
Filed Sept. 1, 1971, Ser. No. 177,185

Claims priority, application Japan, Sept. 4, 1970, 45-77072

Int. Cl. G03c *1/34*

U.S. Cl. 96—109 **1 Claim**

Graininess of a light-sensitive silver halide photographic material is improved by incorporating in any of the layers thereof a copolymer containing a n-vinylpyrrolidone unit with a mercaptotetrazole compound of the general formula,



wherein R_1, R_2 and R_3 are individually a hydrogen atom, an alkyl, alkenyl or alkynyl group, or an aryl or aralkyl group, and R_2 and R_3 may be same or different.

3,804,634

PHOTOGRAPHIC SUPERSENSITIZED SILVER HALIDE EMULSION

Keisuke Shiba; Seiiti Kubodera, and Takeo Sakai, all of Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1972, Ser. No. 236,175

Claims priority, application Japan, Mar. 20, 1971, 46-15679

Int. Cl. G03c *1/08*

U.S. Cl. 96—125 **11 Claims**

A photographic silver halide emulsion containing merocyanine dyes and cadmium salt, in which the spectral sensitizing activity is greatly strengthened is disclosed.

3,804,635

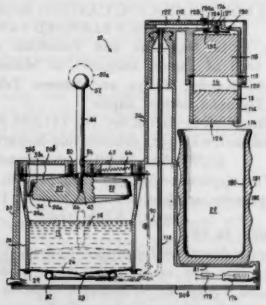
COFFEE INFUSION APPARATUS

Robert L. Weber, 49 Clapboard Hill Rd., New Canaan, Conn.

Filed Aug. 24, 1972, Ser. No. 283,562

Int. Cl. A47j *31/34*

U.S. Cl. 99—283 **17 Claims**



An apparatus for the preparation of an infusion of coffee or the like includes a first chamber in which a liquid is heated to a predetermined temperature. A material to be infused with the liquid is contained in a second chamber which is in fluid communication with the first chamber through a passage extending above the liquid level in the first chamber. A weight dimensioned to fit closely inside the first chamber is latched in position above the liquid surface. When the liquid has been heated to the predetermined temperature, the weight is released and descends through the first chamber, trapping air underneath it. The weight forces the hot liquid under substantially constant pressure from the first chamber through the passage into the second chamber to form the infusion therein. The trapped air is then forced through the material to remove any remaining excess liquid.

A restriction is provided for controlling the rate of flow. In one embodiment, at the inlet to the second chamber, a bimetallic disc valve is positioned for controlling the rate of flow of the hot liquid into the second chamber, for allowing initial flooding of the infusion chamber, and for preventing "channelling" of the liquid directly through the material to be infused. In a second embodiment, the outlet from the second chamber is restricted.

3,804,636

METHOD OF MAKING ANAGLYPHIC PRINTING PLATES

Iwazo Kawamoto, and Hidehiko Kawamoto, both of 91 Dogashiba-cho, Tennoji-ku, Osaka-shi, Osaka-fu, Japan

Filed Aug. 7, 1972, Ser. No. 278,539

Int. Cl. G03c *5/00;* **G03f** *7/00*

U.S. Cl. 96—36.3 **2 Claims**

Anaglyphic printing is produced by forming a rigid relief plate, shadowing the shade sides of the rigid relief plate by spraying color thereat at an oblique angle from above, photographing the shadowed relief plate and producing the printing plate from such photograph. The rigid relief plate is formed by flowing tacky gypsum onto a flat gypsum plate to form the relief pattern thereon and then converting the resulting raised tacky gypsum relief into a rigid gypsum relief integral with the surface of the flat gypsum plate by drying the same. The flat gypsum plate may be produced as a block-copy by outlining on its surface the pattern to be formed thereon, and then applying the tacky gypsum according to the outlined pattern.

3,804,637

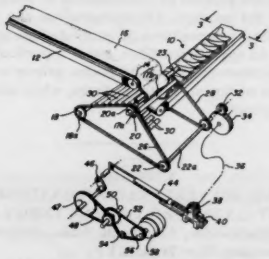
DOUGH LAPPING APPARATUS

Jack J. Rejsa, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 2, 1972, Ser. No. 294,141

Int. Cl. A23p *1/00;* **B65h** *17/42*

U.S. Cl. 99—450.1 **6 Claims**



A dough lapping apparatus is described which includes a dough strip guide consisting of guide rolls mounted for rotation between two parallel drive chains entrained over three laterally spaced pairs of sprockets. The center pair of

sprockets is raised above the other two pairs to form an apex. A drive arrangement is provided to move the chains in unison first in one direction and then in the other thereby causing the rolls mounted between the chains to oscillate alternately to the left and right. An endless strip of dough is fed between the guide rolls. A takeaway conveyor is mounted at right angles to the in-feed conveyor beneath the raised set of sprockets to receive the dough strip which, as the guide rolls oscillate, is folded back and forth across itself to provide a lapped dough structure on the take-away conveyor. A preferred drive arrangement consists of a rack and pinion geared to one of the chain sprockets. Simple harmonic motion provided by a crank arm connected to the rack and pinion is modified by an eccentric drive to speed up the harmonic motion at the end of each stroke of the rack.

3,804,638

ELECTROLESS DEPOSITION OF DUCTILE COPPER

Hendrik Jonker; Arian Moienaar, and Eise Bernard Geertsema, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,806

Claims priority, application Netherlands, Oct. 16, 1969, 6915718

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **9 Claims**

A bath for electroless copper-plating containing a soluble copper salt, one or more complexing agents, formaldehyde and as an addition, which gives copper a satisfactory colour and makes it ductile also in case of comparatively large layer thicknesses, a polyalkylene oxidic compound including at least four alkylene oxide groups. The bath does not contain cyanide, nitrile or a metal compound of, for example, V, As or Sb.

3,804,639

COATING COMPOSITION HAVING POLYMERIC SILOXANE BINDER AND DISPERSED FILLER

Nils Olof Trulsson, New Orleans, and Dickens Mario Lagos, Gretna, both of La., assignors to Standard Paint & Varnish Company, Harvey, La.

Continuation-in-part of Ser. No. 54,638, July 13, 1970, abandoned. This application Oct. 3, 1972, Ser. No. 294,648

Int. Cl. C09d *5/10*

U.S. Cl. 106—1 **24 Claims**

A polymeric siloxane binder composition which is the product obtained by polymerizing or condensing a tetraalkyl or tetraalkoxyalkyl orthosilicate in a hydroxylic solvent in the presence of a peroxide and a catalytic amount of a strong acid, solvolysis frequently occurring. There is preferably added a minor amount of an ester of a mineral acid and added water may be present during the formation of the product in an amount up to 90 percent of that required to effect complete hydrolysis of the product. The composition can be used to produce coating compositions of general application by admixture with an appropriate filler, and it is particularly suited for the preparation of an anti-corrosion primer composition for protection of ferrous metal surfaces, when admixed with metallic zinc powder.

3,804,640

FAST DRYING, SOLVENT FREE, PEROXYDIPHOSPHATE CATALYZED PRINTING INK VEHICLE

Geoffrey R. Buckwalter, Cincinnati, Ohio, assignor to Cities Service Company, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,754

Int. Cl. C09d *11/06, 11/00*

U.S. Cl. 106—27 **5 Claims**

A solvent-free printing ink vehicle that dries rapidly under the influence of heat alone or heat in conjunction with ultraviolet light, and printing ink compositions containing said vehicle. The printing ink vehicle comprises an ester of a saturated or unsaturated aliphatic alcohol and a C_{12} to C_{20} unsaturated fatty acid, a film forming resin, and a metal salt of peroxydiphosphoric acid. Printing ink compositions employing these vehicles can be dried in less than 1 second.

3,804,641

METHOD OF PRODUCING FOUNDRY MOULDS AND CORES

Abram Moiseevich Lyass, Sharikopodshipnikovskaya ulitsa, 2, kv. 146; Pavel Afanasievich Borsuk, Nizhne-Pervomaiskaya ulitsa, 59, kv. 10; Zokhrab Gamid Ogly Usubov, B. Cherkizovskaya ulitsa, kvartal 8-11, korpus 21, kv. 106; Viktor Georgievich Kuznetsov, 5 Kozhukhovskaya ulitsa, 10, kv. 36; Naum Yakovlevich Kagan, 2 ulitsa Mariinoi roschi, 14v, kv. 22, all of Moscow; Jury Alexeevich Razumeev, ulitsa Kolontsova, 7, kv. 6, Mytischi Moskovskoi Oblasti; Vladimir Mironovich Bortnik, Eiskaya ulitsa, 9, kv. 26, and Isai Volfovich Korenbljum, Veernaya ulitsa, 3, korpus 4, kv. 112, both of Moscow, all of U.S.S.R.

Filed Apr. 11, 1972, Ser. No. 243,066

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.2 **5 Claims**

A method of producing foundry moulds and cores comprising the steps of preparing a mixture containing a moulding sand, an ingredient chosen from the group which consists of ligno sulphonate of an alkali, alkali-earth metal, ammonium and their mixture as a binder, a material containing aluminate of an alkali metal as a hardener and water, making moulds and cores from said mixture and weathering to harden. The material containing aluminate of an alkali metal is an intermediate product obtainable in the production of aluminum oxide from bauxite or nepheline ores. According to the invention the foundry moulds and cores can be manufactured of a fluid moulding mixture containing a foaming agent apart from said ingredients. To enhance the strength of the moulds and cores the mixture can also contain a water-binding addition, such as cement or carbamide.

3,804,642

EXOTHERMIC ANTIPIPING COMPOSITIONS

Bernhard Carl Rumbold, and John Edward Cartwright, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, England

Continuation of Ser. No. 92,158, Nov. 23, 1970, abandoned. This application Feb. 20, 1973, Ser. No. 334,016

Int. Cl. B28b *7/36*

U.S. Cl. 106—38.27 **5 Claims**

Exothermic antipiping compositions comprising particulate heat insulating refractory material, 1 – 50 percent by weight of acid treated graphite and 10 – 50 percent by weight of an exothermic component.

3,804,643

PROCESS FOR PRODUCING CASTING MOLDS USING A DRY FLOWABLE BLENDED SAND

Tokumitsu Arita, Nagasaki, and Toshihiko Akanuma, Fukuoka, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Showa Tekko Kabushiki Kaisha, Fukuoka, both of, Japan

Continuation-in-part of Ser. No. 111,600, Feb. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 32,557, Apr. 28, 1970, abandoned.

This application May 23, 1972, Ser. No. 256,002

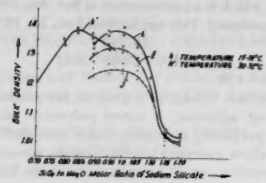
Claims priority, application Japan, May 27, 1969, 44-41108

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.35 **10 Claims**

A method is described for producing a dry flowable blended sand and using this sand in making a casting mold. The blended sand is prepared by mixing a refractory particle, such as silicious sand, with an alkali metal silicate solution, such as a sodium silicate solution of at least 40 percent (weight) solids content whose SiO_2 to Na_2O molar ratio has previously been

adjusted with NaOH solution of at least 40 percent (weight) solids content to a molar ratio of 0.7 to 1.1 to thereby precipitate and deposit crystalline alkali metal silicate on the surface of said refractory particle, and thereafter blending the thus treated refractory particle with a powder of silicon, silicon alloy such as ferrosilicon, silicide such as calcium silicide or a mixture thereof, pouring the blended sand into a molding frame and allowing it to harden therein. The precipitation and deposition of the alkali metal silicate from solution is hastened by the addition of an alcohol such as methanol, or metal salt such as NaCl to the alkali metal silicate solution.



3,804,644

CERAMIC GREEN MIX

Horace A. Wilkinson, Lilli Pilli, and Theodore A. Wilkinson, Turramurra, New South Wales, both of Australia, assignors to Monier Research & Development Pty., Ltd., Villawood, New South Wales, Australia

Continuation of Ser. No. 707,285, Feb. 21, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,242

Claims priority, application Australia, Mar. 7, 1967, 18566/67

Int. Cl. C04b *35/02*

U.S. Cl. 106—45 **2 Claims**

Ceramic green mix suitable for pressure molding and extrusion techniques consists of basic igneous rocks free of free quartz (basalt, dolerite, gabbro), clay 10–20% by weight of rocks, and water 4 to 9 parts per 10–20 parts of clay, respectively.

3,804,645

VANADIUM CONTAINING ALKALI METAL-LEAD-PHOSPHATE GLASS

Cyril John Lewis; Neil Hunter Ray, and William Derek Robinson, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 28, 1972, Ser. No. 293,154

Claims priority, application Great Britain, Oct. 15, 1971, 48104/71

Int. Cl. C03c *13/00, 3/16*

U.S. Cl. 106—50 **11 Claims**

The addition of small quantities of V_2O_5 to low-softening potassium/lead phosphate glasses improves their water resistance. The use of larger quantities of V_2O_5 may give crystal formation in the glass. Potassium may be replaced by other alkali metals.

Glasses having the composition (moles percent) P_2O_5, 46–61; PbO, 12–32; alkali metal oxide, 15–21; V_2O_5, 1.2–1.5; Group 2 metal oxides (excluding mercury), 0–6 are disclosed.

3,804,646

VERY HIGH ELASTIC MODULI GLASSES

William H. Dumbaugh, Jr., Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 832,467, June 11, 1969, abandoned. This application July 20, 1972, Ser. No. 273,435

Int. Cl. C03c *13/00, 3/04*

U.S. Cl. 106—52 **1 Claim**

This invention relates to beryllium-free silicate glasses exhibiting elastic moduli greater than about 16×10^6 psi and liquidus temperatures below about 1,350°C. More specifically, this invention relates to high elastic moduli glasses in the MgO-Al_2O_3 base composition field containing about 8–40 mole percent total of high field strength modifiers, essentially including TiO_2 and La_2O_3, Ta_2O_5 or Y_2O_3, selected from the group consisting of TiO_2, La_2O_3, Ta_2O_5, Y_2O_3, CaO and ZrO_2.

3,804,647

POROUS GLASS SUPPORTS FOR AUTOMOTIVE EMISSIONS CONTROL CATALYSTS

Thomas H. Elmer, and Richard E. Tischer, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,402

Int. Cl. C03c *3/06, 3/30*

U.S. Cl. 106—54 **2 Claims**

This invention relates to a stabilized porous glass support material for noble metal and base metal catalysts, useful in the catalytic conversion of harmful automotive exhaust emissions. A process for preparing the support material and methods for using it in automotive pollution control systems are also described.

3,804,648

GRAPHITE COMPOSITIONS

James Derek Birchall, and John Edward Cassidy, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 29, 1971, Ser. No. 203,028

Claims priority, application Great Britain, Dec. 11, 1970, 59039/70

Int. Cl. C04b *35/52*

U.S. Cl. 106—56 **19 Claims**

A composition suitable for a wide range of purposes such as producing shaped articles, including refractory crucibles, which comprises

a. a graphite

b. a binder consisting of either

i. a complex phosphate of aluminium containing at least one chemically bound molecule of a hydroxy compound, ROH, wherein R is an organic group or hydrogen and an anionic group of a strong inorganic acid, other than an oxy-phosphorus acid, or of a carboxylic acid, or

ii. an aluminium phosphate in which the ratio of the number of gram atoms of aluminium to the number of gram atoms of phosphorus is at least 1:1; and

c. a dispersant for the binder.

3,804,649

ZIRCON REFRACTORY COMPOSITIONS

Edward L. Manigault, Cincinnati, Ohio, assignor to The Chas. Taylor's Sons Company, Cincinnati, Ohio

Filed Dec. 20, 1972, Ser. No. 316,700

Int. Cl. C04b *35/12, 35/16*

U.S. Cl. 106—57 **2 Claims**

A new refractory composition from 85.0 percent to 98.8 percent zircon, from 1.0 percent to 8.0 percent chromic oxide and from 0.2 percent to 5.0 percent titanium dioxide has been prepared which has a low porosity, a high modulus of rupture and has a high resistance to corrosion by molten metals.

3,804,650
SILICATE BINDERS

Helmuth E. Meissner, Painted Post; Francis L. Orso, Corning; Timothy E. Pierce, Pine City, and Janice L. Stiles, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 45,908, June 12, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,297
Int. Cl. C04b 35/72, 35/14, 35/16
U.S. Cl. 106—84 6 Claims

This invention relates to the manufacture of silica-containing bonding materials capable of imparting improved green-body strength to ceramic articles such as refractory bodies which are to be subsequently sintered and to composite bodies made from such materials as asbestos, fiber glass, sawdust, and wood shavings. More specifically, this invention is founded primarily upon the discovery that when certain organic compounds and/or MgO treated in a particular manner are added to true solutions, colloidal solutions, or suspensions of silicates containing at least 1 mole of silica per liter in solution and/or colloidal solution and having a pH greater than about 10, a reaction will occur reducing the pH and polymerizing the silica. The resulting silica network structure bonds very strongly to inert or essentially inert filler materials, forming bodies having uniquely desirable characteristics.

3,804,651
LIME SILICO-PHOSPHATE CEMENT

Charles E. Semler, Bethel Park, Pa., assignor to The United States Department of Transportation, Washington, D.C.

Filed July 21, 1972, Ser. No. 273,746
Int. Cl. C04b 7/36, 1/00
U.S. Cl. 106—85 19 Claims

A quick setting lime silico-phosphate cement prepared by reacting Wollastonite ($CaSiO_3$) and buffered phosphoric acid. The cement has particular utility in highway patching operations.

3,804,652
METHOD OF PRODUCING CALCIUM SILICATE PRODUCTS

Thomas Gordon Laidler, and Dennis Booth, both of Darlington, England, assignors to The Chemical & Insulating Company Limited, London, England

Continuation-in-part of Ser. No. 766,069, Oct. 9, 1968, abandoned. This application Sept. 1, 1971, Ser. No. 177,059
Claims priority, application Great Britain, Dec. 27, 1967, 58651/67
Int. Cl. C04b 15/12
U.S. Cl. 106—118 8 Claims

A method of producing calcium silicate products, such as drain pipes and insulating material, by allowing an aqueous solution of calcium chloride to react with an aqueous solution of an alkali metal silicate to produce a suspension of calcium trisilicate which is then filtered to form a cake that is washed as free as possible from sodium chloride. The cake may then be resuspended and reacted with hydrated lime at an elevated temperature, divided into a plurality of units which set to a self-supporting state by moulding in the presence of an alumina bearing substance, after which the units are autoclaved in saturated steam at superatmospheric pressure to form in the product 11 Au tobermorite having the empirical formula 5 CaO: 6 SiO_2: 5 H_2O.

3,804,653
ADHESIVE

Horton Harold Morris, Macon; Richard Jacob Drexel, Jr., Irwinton, and Kenneth Lamar Turner, Gordon, all of Ga., assignors to Freeport Minerals Company, New York, N.Y.

Continuation-in-part of Ser. No. 817,258, April 10, 1969, abandoned, which is a continuation of Ser. No. 599,372, Dec. 6, 1966, abandoned. This application Feb. 25, 1970, Ser. No. 14,244
Int. Cl. C08b 25/02
U.S. Cl. 106—124 20 Claims

The disclosure relates to a process for preparing an adhesive, a novel adhesive, a novel polymeric material and a process for preparing extremely stable emulsions. The process of the invention comprises subjecting an aqueous mixture of starch or protein, or at least two insoluble substances, and grinding media to an agitation in the presence of a pigment, if desired, and then removing the grinding media therefrom. The treated starch or protein may be further reacted with a polymerizable monomer or preformed polymer to form the novel polymeric material. A superior adhesive, which finds particular application in coating base materials, as paper, is obtained. Stable emulsions formed are particularly useful in pharmaceutical and food applications.

3,804,654
MODELING COMPOSITION

Tien Liu, Cincinnati, Ohio, assignor to General Mills Fun Group, Inc., Minneapolis, Minn.

Filed Feb. 7, 1972, Ser. No. 224,232
Int. Cl. C08b 25/02; C08h 7/04
U.S. Cl. 106—134 6 Claims

A modeling composition is disclosed including mineral fillers such as clay and talc, hydrocarbon petroleum distillate oil, waxy paraffinic hydrocarbon oil, a liquid silicone compound, an astringent, a humectant, glue and water. The composition may be shaped and then permanently set.

3,804,655
PIGMENTS

John James Hinley; David Graeme Milne, both of Middlesbrough, and Keith Goldsbrough, Stockton-on-Tees, all of England, assignors to British Titan Limited, Billingham, Teeside, England

Filed Mar. 30, 1972, Ser. No. 239,706
Claims priority, application Great Britain, Apr. 7, 1971, 9036/71
Int. Cl. C09c 1/36
U.S. Cl. 106—300 15 Claims

Pellets of titanium dioxide, the particles of the titanium dioxide having a coating of one or more hydrous oxides in the total amount of at least 3.5 percent by weight of TiO_2, preferably the particles of titanium dioxide have a coating of hydrous oxide in a total amount of at least 5 percent and may be up to 35 percent by weight of TiO_2.

3,804,656
PIGMENT DISPERSIONS AND USE THEREOF

Adam F. Kaliski, Hightstown, and Edgar W. Sawyer, Jr., Edison, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Woodbridge Township, N.J.

Filed Feb. 22, 1972, Ser. No. 228,329
Int. Cl. C09c 3/00
U.S. Cl. 106—308 Q 7 Claims

A fluid dispersed suspension of clay or other negatively charged pigment or filler is produced by adding the pigment or filler to water in the presence of the combination of a nonionic surface active agent and a cationic surface active agent at an alkaline pH. The resulting suspension may be incorporated into cationic media, e.g., a solution of cationic starch, protein adhesive or cationic latex, to produce improved paper coating

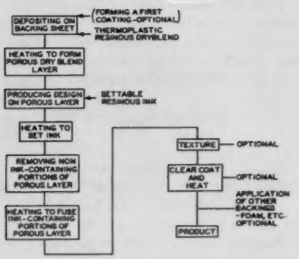
compositions. The suspension may be incorporated into a solution of a cationic resin to produce a conductive coating for electrographic reproduction paper. Improved optical performance and printability are obtained when the suspension is employed in the production of a filled paper product.

3,804,657

PROCESS FOR PRODUCING DECORATIVE SURFACE COVERING

Douglas R. Eyman, and Walter J. Lewicki, Jr., both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed June 7, 1971, Ser. No. 150,391
Int. Cl. D21h *1/10*
U.S. Cl. 117—11 **16 Claims**


DEPOSITING ON BACKING SHEET
FORMING A FIRST COATING-OPTIONAL
THERMOPLASTIC RESINOUS DRYBLEND
HEATING TO FORM POROUS DRY BLEND LAYER
PRODUCING DESIGN ON POROUS LAYER
SETTABLE RESINOUS INK
HEATING TO SET INK
REMOVING NON INK-CONTAINING PORTIONS OF POROUS LAYER
HEATING TO FUSE INK-CONTAINING PORTIONS OF POROUS LAYER
TEXTURE
OPTIONAL
CLEAR COAT AND HEAT
OPTIONAL
APPLICATION OF OTHER BACKINGS -FOAM, ETC- OPTIONAL
PRODUCT

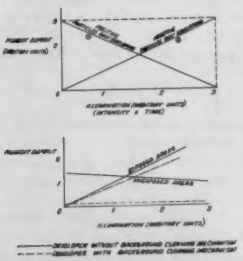
A process for producing a resinous composition surface covering having a multi-level decorative surface by depositing a layer of granular resinous dryblend on a backing sheet, heating the granules to form a porous cohesive layer therefrom, cooling the layer and applying settable resinous inks thereto to form a design thereon, gelling the ink, removing non-design carrying portions of the porous layer, and heating to fuse all of the remaining resinous material. Additional surface alterations of the multi-level surface, such as texturing, may be accomplished by chemical or mechanical means. After-finish coatings may be applied to enhance the appearance and utility of the surface covering.

3,804,658

METHOD OF IMPROVING DEVELOPMENT OF XEROGRAPHIC IMAGES

Kenneth A. Metcalfe, 1 Corona Ave., Lockleys, and William H. Lowe, 21 Katoomba Rd., Beaumont, both of Australia

Division of Ser. No. 754,251, Aug. 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 381,347, July 9, 1964, abandoned. This application Aug. 5, 1971, Ser. No. 169,548
Int. Cl. G03g *9/04, 13/10*
U.S. Cl. 117—37 LE **5 Claims**



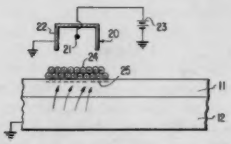
A method of producing an improved developer for xerographic surfaces in which the image is produced without an applied charge. The developer is formed by suspending a controlled developer pigment of one polarity in an insulating carrier liquid. A second developer medium also capable of acting as a developer, but of opposite polarity and incapable of wetting the first pigment, is used to enhance deposition of the first pigment in image areas and to shield the non-image areas against deposition of the first developer.

3,804,659

ELECTROPHOTOGRAPHIC REVERSAL DEVELOPMENT PROCESS FOR ENHANCING THE QUALITY OF THE DEVELOPED IMAGE

Masamichi Sato; Yasuo Tamai; Osamu Fukushima; Seiji Matsumoto, and Kazuo Horikawa, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 10, 1971, Ser. No. 205,996
Claims priority, application Japan, Dec. 10, 1970, 45-109877
Int. Cl. G03g *13/10*
U.S. Cl. 117—37 LE **4 Claims**



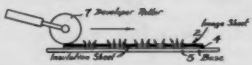
An electrophotographic process occurring subsequent to the liquid reversal development of a photoconductive insulating layer comprising majority and minority charge carriers with a toner having a polarity opposite to that of the minority charge carriers characterized by charging evenly the reversely developed surface of the photoconductive insulating layer with corona ions of the same polarity as that of the minority charge carriers, and subsequently squeezing the residual liquid adhering to the insulating layer from the liquid reversal development step by means of squeeze rollers.

3,804,660

DIELECTRIC RECORDING ON INSULATOR SURFACES

Kenneth A. Metcalfe, Lockleys, and William H. Lowe, Beaumont, both of Australia, assignors to The Commonwealth of Australia

Filed Aug. 16, 1971, Ser. No. 172,084
Claims priority, application Australia, Aug. 17, 1970, 2215/70; Aug. 16, 1971, 32375/71
Int. Cl. G03g *13/08, 13/10*
U.S. Cl. 117—37 LE **19 Claims**



A method is provided for effecting dielectric recording on insulator surfaces. The image is formed on an insulator sheet by varying imagewise the dielectric characteristics of the insulator sheet, and then applying a charge through the sheet from one side of the sheet while developing the other side of the sheet.

3,804,661

MATERIALS HAVING HYDROPHOBIC AND OLEOPHILIC CHARACTERISTICS AND METHOD FOR PREPARING

Emile Muntzer, and Paul Muntzer, both of Strasbourg, France, assignors to WIBAU, Westdeutsche Industrie-und Strassenbau-Maschinen-Gesellschaft m.b.H., Rothenbergen, Germany

Filed Feb. 14, 1972, Ser. No. 226,333

Claims priority, application France, Feb. 24, 1971, 71.07030

Int. Cl. B01d *15/00*; B44d *1/14*

U.S. Cl. 117—62.2 13 Claims

Powderized, comminuted or granular materials are made hydrophobic or water repellent and simultaneously oleophilic or oil attracting by first mixing the materials with a chromium salt solution and then adding to the mixture a bridging agent such as a thermoplastic hydrocarbon which envelopes the material particles. These materials are especially suitable for the clean-up of oil spills.

3,804,662

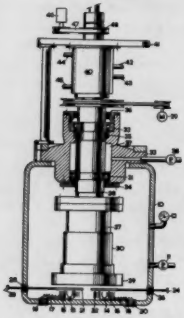
PROCESSES FOR THE PRODUCTION OF ALLOYS

Robert Lewis Bickerdike, Alton, and William Norman Mair, Farnham, both of England, assignors to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 843,734, July 22, 1969, abandoned. This application Dec. 3, 1971, Ser. No. 204,708

Int. Cl. C23c *13/02*

U.S. Cl. 117—71 R 3 Claims



A process for producing bulk alloys as engineering materials is carried out in a vacuum vessel and includes evaporating the constituents and depositing them upon a collector in such a way that the deposit is laid down in successive layers. This is achieved by arranging that the collector and the source or sources from which the constituents are evaporated move relative to one another. Preferably the source or sources are stationary and the collector is moved relative thereto. In this way it is possible to achieve the high evaporation and deposition rates necessary to economical production of alloys by deposition of the constituents from the vapor phase and also faults in the deposit such as columnar growth and intercolumnar porosity may be substantially eliminated. Apparatus in which this process may be carried out is described.

3,804,663

METHOD OF INTERNALLY COATING RIGID OR SEMI-RIGID PLASTIC CONTAINERS

Dale E. Clark, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 26, 1971, Ser. No. 147,120

Int. Cl. B44d *1/02*

U.S. Cl. 117—101 18 Claims

A method for spin coating the interior of a generally rigid or semi-rigid plastic hollow article, such as a container or parison, with a synthetic organic resinous material to provide a protective coating therein. The method comprises placing a quantity of a dispersion of synthetic organic resinous material, preferably a latex or solution, in a hollow article, spinning the article at high speed thereby causing centrifugal force to distribute and hold a coating of the dispersion uniformly on the interior surfaces of the same and then heating the coating while continuing to spin the article. The result of the spin coating method is an article with a substantially uniform interior protective film providing improved article characteristics such as gas and liquid barrier properties, color and appearance, taste and flavor protection and the like.

3,804,664

PROCESS FOR CHEMICAL VAPOR DEPOSITION OF ZIRCONIUM CARBIDE

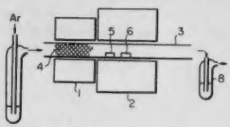
Katsuichi Ikawa; Fumiaki Kobayashi, and Kazumi Iwamoto, all of Ibaragi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Sept. 20, 1971, Ser. No. 181,753

Claims priority, application Japan, Sept. 24, 1970, 45-83225

Int. Cl. C23c *11/00*, *11/08*

U.S. Cl. 117—106 C 8 Claims



Deposition of zirconium carbide on a substrate is advantageously effected by reacting zirconium and methyl iodide under heating. The deposition of zirconium carbide is useful for coating of a rocket nozzle surface, coating of granular fuels for gas cooled nuclear reactor and the like.

3,804,665

VAPOUR DEPOSITION COATING PROCESS

Robert David Chapman, 62 Beckwith Rd., Harrogate, England

Filed Apr. 19, 1972, Ser. No. 245,655

Claims priority, application Great Britain, Apr. 21, 1971, 10348/71

Int. Cl. C23c *9/00*

U.S. Cl. 117—107.2 P 14 Claims

Metal substrates may be chromised by subjecting them to a diffusion heat treatment in which the substrate is placed in contact with a flexible carrier sheet having adherent thereto or incorporated therein chromium metal or an alloy thereof or a reducible compound of chromium. Particularly suitable flexible carrier sheets are made from asbestos paper. If chromium metal or an alloy thereof is employed it is necessary that a halide is also present. This may be present either on the surface of the substrate itself, on the flexible carrier sheet bearing the chromium or its alloy or on a separate sheet of flexible carrier material.

3,804,666

GLAZED CERAMIC WARE

Richard Andrew Eppler, Timonium, and Eugene F. O'Conor, Baltimore, both of Md., assignors to SCM Corporation, Cleveland, Ohio

Filed Dec. 13, 1971, Ser. No. 207,522
Int. Cl. C03c 9/00
U.S. Cl. 117—125 **3 Claims**

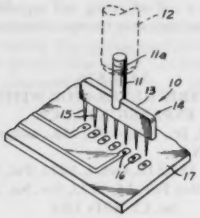
Disclosed are compositions and methods for glazing low-expansion ceramic ware with an opaque, non-porous, acid-resistant, low-expansion, semi-crystalline glass-ceramic glaze which can be subjected to relatively high firing temperatures (relatively high with respect to firing temperatures for low-expansion glazes) without the formation of "wash boarding" or other surface defects associated with overfiring. The compositions are lithium aluminosilicate frits containing sufficient ZrO_2 so that zirconia is present as a crystalline phase in the fired glaze. The invention shows particular advantage for making glazes of adjustable and low expansion for thermal shock-resistant ceramic whiteware, for example, dinnerware, cookware and ceramic tile.

3,804,667

METHOD FOR OPENING EYELET HOLES IN PRINTED CIRCUIT BOARDS

William M. Halstead, Glen Burnie, Md., assignor to Techni-Tool, Inc., Philadelphia, Pa.

Division of Ser. No. 862,165, Sept. 30, 1969, Pat. No. 3,632,972. This application Dec. 27, 1971, Ser. No. 212,365
Int. Cl. C23c 1/00
U.S. Cl. 117—212 **5 Claims**



A method of simultaneously opening solder plugged eyelet holes by inserting prongs into and through the holes thereby ejecting melted solder from the holes. The ejected solder surrounding but not adhering to the prongs and hardening around the holes.

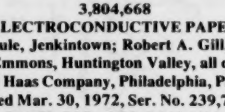
3,804,668

ELECTROCONDUCTIVE PAPER

Ronald D. Bakule, Jenkintown; Robert A. Gill, Abington, and William D. Emmons, Huntington Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 30, 1972, Ser. No. 239,771
Int. Cl. G03g 7/00; B44d 1/00
U.S. Cl. 117—201 **3 Claims**

An electroconductive paper useful in electrostatic image reproduction techniques containing a polymer comprising units of the formula:



wherein
R is H or CH_3,
A is a $(C_2–C_3)$alkylene group,
R^1 is a hydroxyethyl or hydroxypropyl group,
R^2 is a $(C_1–C_4)$alkyl group
R^3 is a $(C_1–C_4)$alkyl group, and
$X^{\ominus}$ is an anion selected from acetate, formate, lactate, propionate and glycolate anions.

3,804,669

FLAME-RESISTANT RESISTOR COATINGS

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 652,412, July 11, 1967, Pat. No. 3,655,607. This application Oct. 5, 1971, Ser. No. 186,787
Int. Cl. B44d 1/34, 1/42
U.S. Cl. 117—218 **7 Claims**

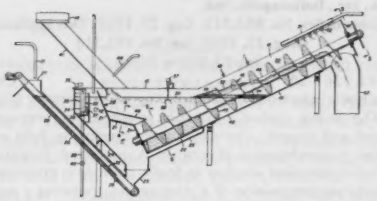
Flame resistant polyimide resistory coatings containing chlorinated polyphenyl and antimony trioxide.

3,804,670

DISPLACEMENT RINSING APPARATUS

John Farmer, Honolulu, Hawaii, assignor to Ward Foods, Inc., New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 190,934
Int. Cl. C13d 1/00
U.S. Cl. 127—5 **23 Claims**



Apparatus for removing dirt and extracting juice from disintegrated sugar cane, having a tank in which the cane is washed in sugar juice, a conveyor for discharging washed cane from the tank and enabling diluent liquid sprayed on the discharging cane to rinse further dirt and displace rich juice therefrom, and a settling compartment connected to the bottom of the tank for receiving and separating dirt and rich juice.

3,804,671

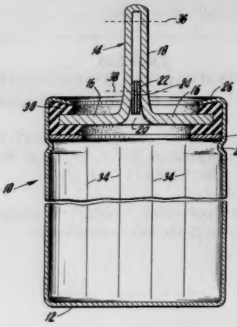
NON-AQUEOUS BATTERY CONSTRUCTION AND METHOD OF SEALING SAME BY COLD WELDING

Martin G. Rosansky, Monsey, N.Y., assignor to Power Conversion, Inc., Mt. Vernon, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,151
Int. Cl. H01m 1/02
U.S. Cl. 136—6 LN **11 Claims**

A non-aqueous battery, such as a lithium battery, includes a casing containing electrodes and an electrolyte. A battery top is disposed across the open end of the casing with an upstanding tube-like portion extending therefrom. An annular insert is disposed within the tube-like projection. Both the top and the insert are formed of a malleable metal, such as aluminum. To hermetically seal the battery after its liquid contents has been added through the tube-like projection, the top is pinched along a plane projecting radially through the tubulation and

the insert thereby forming a cold weld. This provides a unique solution to the problems of leakage and contamination. It is



thus possible to simply and effectively contain high vapor pressure anhydrous liquid components of an electrolyte.

3,804,672

METHOD OF MAKING A MOLYBDENUM TRIOXIDE ELECTRODE BY PYROLYTIC DECOMPOSITION

Arabinda N. Dey, Needham, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Division of Ser. No. 853,312, Aug. 27, 1969. This application Aug. 25, 1971, Ser. No. 192,716

Int. Cl. H01m *35/02*

U.S. Cl. 136—20 **4 Claims**

Cathodic electrodes incorporating molybdenum trioxide (MoO_3) active cathode material, methods of preparation thereof and organic electrolyte cells employing light metal anodes in combination therewith. A preferred preparation method is disclosed wherein an MoO_3 cathode is produced by pyrolytic decomposition of a mixture incorporating a molybdenum salt, wherein the molybdenum is hexavalent. Cells exhibiting high energy density, extended shelf life, relatively constant output voltage and good current capability are also disclosed.

3,804,673

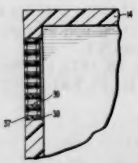
SEA WATER BATTERY CASING FOR MINIMIZING INTERCELL SHORT CIRCUITS

Edwin K. Butler, deceased, late of St. Petersburgh, Fla., assignor to Adriana Neil Butler, St. Petersburgh, Fla.

Division of Ser. No. 865,429, Oct. 10, 1969, Pat. No. 3,630,782. This application Sept. 17, 1971, Ser. No. 181,337

Int. Cl. H01m *1/00*

U.S. Cl. 136—100 M **4 Claims**



A method and apparatus for maximizing the electrical potential of primary batteries of the type immersible in an electrolyte comprising placing a foraminous capacitor within the battery electrolyte port or ports.

3,804,674

OXYGEN ELECTRODE MATERIAL

Tetsuichi Kudo; Motoko Yoshida, both of Tokyo, and Osamu Okamoto, Osaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1972, Ser. No. 255,083

Claims priority, application Japan, May 19, 1971, 46-33247

Int. Cl. H01m *13/00*

U.S. Cl. 136—120 FC **13 Claims**

A material most suitable for use as an oxygen electrode consists of a metal oxide having perovskite structure represented by the general formula:

$$A_{1-x}B_xCoO_{3-\delta}$$

wherein A is Nd and/or Sm, B is Ba, Ca and/or Sr, $0.01 \leqq X \leqq 0.9$, and $0 \leqq \delta \leqq 0.5$.

3,804,675

METHOD OF MAKING AN ORGANIC CHARGE TRANSFER COMPLEX CATHODE

Kenneth R. Hill, Severna, Md., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Division of Ser. No. 823,182, May 8, 1969, Pat. No. 3,653,966. This application Oct. 12, 1971, Ser. No. 189,473

Int. Cl. H01m *15/06*

U.S. Cl. 136—137 **5 Claims**

A high energy cell employing a light metal anode and a cathode, the active material of which is a semi-conductive organic charge transfer complex. In assembly of the cell direct contact of the anode and cathode promotes formation in situ on the anode of a high resistance ionically conductive film which functions as a self-adjusting cell separator. Other features of the invention appear in the specification.

3,804,676

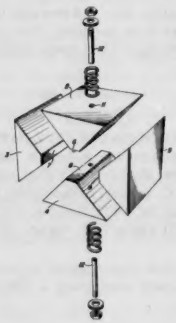
THERMOELECTRIC GENERATOR WITH THERMAL EXPANSION BLOCK

William Henry Sell, Jr., Kingsville, Md., assignor to Isotopes, Inc., Westwood, N.J.

Division of Ser. No. 185,511, Oct. 1, 1971, Pat. No. 3,744,560. This application Feb. 14, 1973, Ser. No. 332,333

Int. Cl. H01v *1/04*

U.S. Cl. 136—205 **1 Claim**



A heat transferring device adapted for use in a thermoelectric generator which automatically compensates for shock, vibration, and thermal expansion is disclosed. The device consists of a relatively solid block composed of four slideably moveable wedges arranged in opposing pairs so that the movement of one pair of wedges together causes the other pair of wedges to move apart, one pair of opposing wedges being provided with means biasing them together.

3,804,677

WORKING OF ALLOYS

Colin John Swanson, Bristol, England, assignor to ISC Alloy Limited of Austral House, London, England

Filed Nov. 6, 1972, Ser. No. 303,718

Claims priority, application Great Britain, Nov. 4, 1971, 51322/71

Int. Cl. C22f 1/16

U.S. Cl. 148—11.5 R 10 Claims

A process for working superplastic sheet material comprising shaping the superplastic alloy by pressure or vacuum forming, annealing the sheet material before or after the pressure of vacuum forming, and bending at least a part of the shaped sheet at room temperature. In a preferred procedure rolled superplastic zinc/aluminium alloy sheet material is annealed at about 200° C for at least one hour, vacuum or pressure forming carried out at 200° C to 250° C after the annealing, and the shaped sheet allowed to cool to room temperature before bending.

3,804,678

STAINLESS STEEL BY INTERNAL NITRIDATION

Lynn E. Kindlimann, Milford, Conn., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 735,186, June 7, 1968, abandoned. This application July 15, 1971, Ser. No. 163,084

Int. Cl. C22c 39/14; C23c 11/16

U.S. Cl. 148—38 7 Claims

An austenitic steel containing as a dispersoid therein particles of a metal nitride. The nitride particles have a free energy of formation of greater than about −21,000 cal/mole and are present at an interparticle spacing of less than about 10 microns.

3,804,679

METHOD OF COATING STEEL PRODUCTS

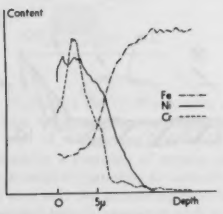
Dominique Thomas Streel, Sclessin, Belgium, assignor to S.A. Cockerill-Ougree-Providence Et Esperance-Longdoz En Abrege, Cockerill, Seraing, Belgium

Continuation-in-part of Ser. No. 825,515, May 19, 1969, abandoned. This application Mar. 9, 1972, Ser. No. 233,254

Claims priority, application Belgium, May 21, 1968, 715496

Int. Cl. C21d 9/00; C23c 13/02

U.S. Cl. 148—134 11 Claims



An as-worked mild steel product is preheated to a temperature insufficient to cause recrystallization. A metallic coating is applied to the preheated surface by metallization under vacuum, and the coated product is recrystallization annealed at a temperature between 650°C and 1,000°C.

3,804,680

METHOD FOR INDUCING RESISTANCE TO EMBRITTLEMENT BY NEUTRON IRRADIATION AND PRODUCTS FORMED THEREBY

William R. Martin, and James R. Weir, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation-in-part of Ser. No. 47,930, June 6, 1970, abandoned, which is a division of Ser. No. 603,085, Dec. 15, 1960, abandoned, which is a continuation of Ser. No. 506,914, Nov. 5, 1965, Pat. No. 3,440,037. This application Aug. 8, 1972, Ser. No. 278,857

Int. Cl. C22c 19/00; C22f 1/10

U.S. Cl. 148—162 2 Claims

Metals and alloys containing incidental amounts of boron are doped with a boride-forming element in an amount effective to induce formation of an intragranularly dispersed precipitated phase at elevated temperatures to produce a product having enhanced resistance to radiation-induced embrittlement at high temperatures.

3,804,681

METHOD FOR MAKING A SCHOTTKY-BARRIER FIELD EFFECT TRANSISTOR

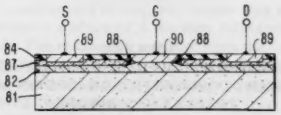
Karsten E. Drangeid, Hedingen; Theodor O. Mohr, Gattikon, both of Switzerland; Horst F. Statz, Peekskill, N.Y., and Waldemar Von Muench, Aachen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 720,648, April 11, 1968, Pat. No. 3,609,477. This application Apr. 2, 1971, Ser. No. 130,819

Claims priority, application Switzerland, Apr. 18, 1967, 5508/67

Int. Cl. H01l 7/34

U.S. Cl. 148—188 6 Claims



A Schottky-barrier field effect transistor is disclosed with a semiconductor channel of relatively low conductivity between the source and drain electrodes which may be electrically influenced by a Schottky-barrier gate electrode located on the semiconductor channel. The transistor is characterized by a zone or region of higher conductivity which extends from the vicinity of the source electrode to near the gate electrode. Further, source and drain regions are conveniently provided for the transistor of semiconductor of the same conductivity type as the channel semiconductor at the Schottky-barrier electrode. Advantageously, the drain region may be made of semiconductor of high conductivity and the same conductivity type as the source region. The high conductivity region may be achieved through either diffusion or epitaxial growth technique.

3,804,682

METHOD FOR CONTROLLED DOPING OF SEMICONDUCTOR CRYSTALS

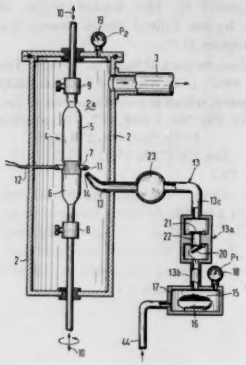
Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 15, 1972, Ser. No. 280,853

Claims priority, application Germany, Aug. 26, 1971, 2142851

Int. Cl. H01l 7/44

U.S. Cl. 148—189 **10 Claims**



Method and apparatus for controlled doping of semiconductor crystals whereby a semiconductor crystal is enclosed in a housing and a floating melt zone is established along the length thereof while simultaneously controlled volumes of a gaseous doping substance is directed by a conduit to the melt zone for diffusion within the resolidified semiconductor crystals. The volume of doping substance supplied to the crystal is regulated by combination of pressures and feed rates, such as by combination of at least two valves having a constant volume chamber therebetween and a program that adjusts the pressure of the dopant supply above the pressure surrounding the crystal melt zone and regulates the frequency of valve operations per unit time. The invention is especially useful for producing n-doped silicon crystals.

3,804,683

HIGH ENERGY, LOW BURNING RATE SOLID PROPELLANT COMPOSITIONS BASED ON ACRYLIC PREPOLYMER BINDERS

Mart G. Baldwin, Newtown, Pa., and Paul H. Gehlhaus, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 7, 1970, Ser. No. 7,324

Int. Cl. C06d 5/06

U.S. Cl. 149—19.5 **13 Claims**

High energy, low burning rate solid propellant compositions are disclosed. The disclosed compositions employ acrylic prepolymers selected from methyl acrylate/acrylic acid copolymer, ethyl acrylate/acrylic acid copolymer, 2-ethylhexyl acrylate/acrylic acid copolymer, butyl acrylat/acrylic acid copolymer, petrin acrylate/acrylic acid copolymer, or 2,2-dinitropropyl acrylate/acrylic acid copolymer in combination with plasticizers selected from the group of plasticizers consisting of triethyleneglycol dinitrate (TEGDN), trimethylolethane trinitrate (TMETN), butanetriol trinitrate (BTTN), glycerine trinitrate (NG), 1,2,3-tris 1,2-bis(difluoroamino)ethoxy propane (TVOPA), and blends of the same, curing catalyst, a mixed oxidizer comprised of ammonium perchlorate and cyclotetramethylene tetranitramine (HMX), and aluminum as fuel.

3,804,684

PROCESS FOR MANUFACTURING A COMPOSITE FOAMED SYNTHETIC RESIN EXTRUDATE HAVING AN OUTER HARD SURFACE LAYER AND AT LEAST ONE HARD INTERLAYER

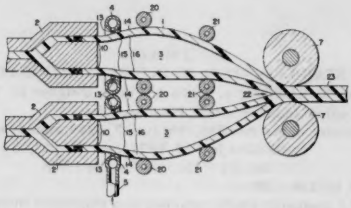
Kenichi Tokushige, Tokyo; Toru Segawa, Kawasaki; Kiminori Uda, Yokohama; Hideho Tada, Chigasaki; Teisuke Ando, Yokohama; Hiroya Yamamoto, Kawasaki, and Noburo Hashimoto, Yokohama, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Jan. 27, 1971, Ser. No. 110,188

Claims priority, application Japan, Mar. 13, 1970, 45-20855

Int. Cl. B29d 27/00; B32b 31/02

U.S. Cl. 156—60 **4 Claims**



Foamed synthetic resin extrudate and the process and equipment for manufacture thereof, comprising forming a melted body of foamable and thermoplastic synthetic resin in an extruder, extruding said body into a tubular body through one or plural dies under atmospheric pressure, forcibly cooling the surface layer of said tubular body to suppress the foaming in the cooled portion and to allow foaming in the other portion and deforming under pressure said tubular body before it loses plasticity.

3,804,685

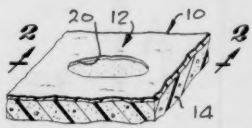
VINYL REPAIR PROCESS

Henry C. Jacoby; Abraham Jacoby, and David Jacoby, all of Los Angeles, Calif., assignors to Specialty Coatings & Chemicals, Inc., North Hollywood, Calif.

Filed June 14, 1972, Ser. No. 262,601

Int. Cl. B32b 35/00

U.S. Cl. 156—98 **6 Claims**

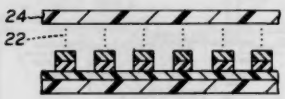


Process for repairing holes or cuts in vinyl upholstery includes adhesive securement of a vinyl under-patch below the hole and filling the hole with a solution of vinyl in solvent, it being critical that some of the vinyl dissolved in the solvent is of the same color material as the vinyl being repaired.

3,804,686
PROCESS FOR MAKING TUNNEL STRUCTURE FOR PLATED WIRE

Anthony M. Apicella, Massillon, and William S. Tuma, Cuyahoga Falls, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 6, 1972, Ser. No. 241,628
Int. Cl. B32b *31/28, 31/10*
U.S. Cl. 156—155 3 Claims

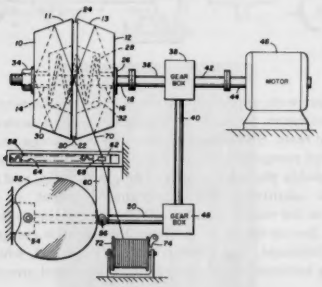


The invention provides a tunnel structure for plated wire which permits precise alignment for plated wire and terminations so that automated bonding of the plated wire may be accomplished, and which will eliminate the use of forming wires during fabrication and hence reduce the scrap rate drastically, and which permits more rapid fabrication of tunnel structures.

3,804,687
METHOD AND APPARATUS FOR REINFORCING CUP-TYPE GRINDING WHEELS

George N. Peterson, Grofton, Mass., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 149,192, June 2, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,445
Int. Cl. B65h *81/00*
U.S. Cl. 156—161 10 Claims

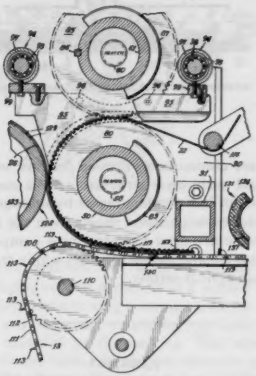


The disclosure illustrates the reinforcement of a cup-type grinding wheel which has a peripheral surface tapering from a grinding face. A pair of wheels are positioned face to face while a tape comprising a plurality of strands of filamentary material is wound around the grinding wheels with a portion of each turn on one cup and the remaining portion on the adjacent cup. The wound tape is saturated with a curable resin and the wheels are urged apart by a spring to maintain the tape in tension. After the resin is cured the tape that extends between the junction of the grinding faces for the wheels is cut off to produce two reinforced cup-type grinding wheels.

3,804,688
SHIRRING MACHINE

George C. Hillenbrand, and Carl A. Wettering, both of Batesville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed Dec. 30, 1971, Ser. No. 213,871
Int. Cl. B31f *1/22*
U.S. Cl. 156—205 7 Claims



Machines for forming panels of decorative material, including means for gathering the material along a plurality of parallel spaced-apart rows; means for applying a backing to the gathered material; means for adhering the decorative material to said backing along said rows.

3,804,689
PROCESS FOR REMOVING COPPER FILMS FROM SUBSTRATES

James E. O'Connor, Centerville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Dec. 3, 1971, Ser. No. 204,768
Int. Cl. B37b *31/00*; B32b *35/00*
U.S. Cl. 156—233 3 Claims

A medium substantially free of copper oxide having a thin, electrically conductive copper film thereon is disclosed. The copper film or circuit is developed on copper oxide surfaces. The copper film then is contacted with dilute hydrofluoric acid. After washing and drying, the copper film is contacted with the adhesive surface of a medium substantially free of copper oxide. The medium is removed from the copper oxide surface with the copper film adhered to the adhesive surface intact. This medium can be used in electronic displays, microrecording and microcircuitry.

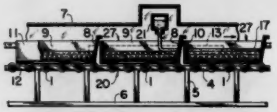
3,804,690
METHOD FOR PREPARING A MULTI-LAYER STRUCTURE

Yoshio Ohno; Korekiyo Eda; Toshio Yamamura, all of Tokyo, and Kosaburo Yamasaki, Ichikawa, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 36,216, May 11, 1970, Pat. No. 3,687,784. This application Feb. 7, 1972, Ser. No. 224,358
Int. Cl. B32b *5/18*
U.S. Cl. 156—242 6 Claims

An easily separable uniform multi-layer structure, as a prefinal product, made of a material such as synthetic resin is prepared continuously and economically by constantly dispensing streams of viscous liquid from above into a continuous series or open top, flat-bottomed receptacles as they move in one direction at a constant speed on the horizontal

surface of at least one straight section of an endless looped conveyor means to first form a uniform layer of said liquid on the entire floor surface of each receptacle, thereafter depositing a partition sheet material such as paper which is non-adhesive to said viscous liquid onto the upper surface of each of said layers of liquid, and repeating the foregoing steps as said



receptacles are continuously carried forward on said looped conveyor. Said multi-layer structure can be easily separated into a plurality of independent layers by subsequently removing the non-adhesive partition sheets from the formed initial multi-layer structure after the remaining components of the latter are solidified and united together within themselves by a treatment such as heat-setting.

3,804,691

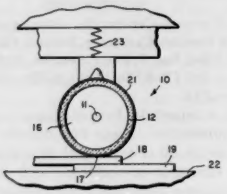
METHOD OF BONDING USING AN INFRARED HEATING LAMP

Mayukh Trigunshankar Trivedi, East Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 12, 1972, Ser. No. 252,734

Int. Cl. B29c *27/02*

U.S. Cl. 156—272 **10 Claims**



An infrared heating lamp has a first portion of its envelope coated with a very thin layer of a material which is highly absorptive of infrared radiant energy. A second portion of the envelope, preferably the rest of the envelope surface, is coated with a material which is highly reflective of infrared radiant energy. The lamp is engaged with one or more first workpieces which are to be bonded to one or more second workpieces such that the absorptive material contacts each engaged workpiece in the vicinity of a desired bonding area. Force on the lamp clamps the workpieces together against a base, while maintaining the coating of the absorptive material in intimate contact with the engaged workpieces at the desired bonding areas. Energization of the lamp, meanwhile, applies sufficient thermal energy to the desired bonding areas through the absorptive coating to cause bonding of the workpieces, e.g., reflow solder bonding. The reflective coating enhances the efficiency of the lamp, while protecting any heat-sensitive workpiece areas adjacent to the desired bonding areas from application of excessive thermal energy. A convection shield may surround the envelope, spaced from the envelope, to minimize convection losses from the lamp.

3,804,692

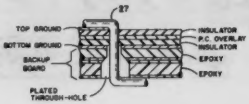
MEMORY PACKAGING DESIGN AND FABRICATION TECHNIQUE

Larry D. Sly, Minneapolis, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 173,511, Aug. 20, 1971. This application June 26, 1972, Ser. No. 266,100

Int. Cl. B32b *31/12*; **H01f** *10/06*

U.S. Cl. 156—300 **1 Claim**



A memory store unit is made by aligning film core areas and bonding them in pairs on either side of a single piece printed wire overlay. Top and bottom insulators are aligned and tacked to a backup board. An adhesive coated top ground plane is applied to the top insulator and the glass substrates. An adhesive epoxy cover is applied to the top ground plane. The top and bottom magnetic shields are applied to the cover and backup board, and the entire package is then subjected to compression and heat to adhere the laminations together into a flat dense package.

3,804,693

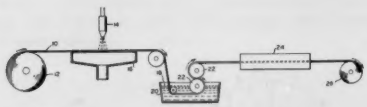
PAPER BASE LAMINATES AND METHOD FOR THE MANUFACTURE THEREOF

Roy Francis Nichols, Jr., Coshocton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 17, 1971, Ser. No. 144,037

Int. Cl. C09j *3/00*

U.S. Cl. 156—330 **4 Claims**



A paper web, especially useful in the manufacture of paper base laminates, is first impregnated with a water soluble phenolic resin. Subsequently, the web is impregnated with an admixture comprising (a) an oil-modified phenolic resin, (b) a water soluble phenolic resin, (c) an epoxy resin, and (d) flame resistant additives. The impregnated paper is dried to evaporate the volatiles and to advance the resins to the desired state. A lay-up of sheets cut from the paper is compressed to form a laminate, and the laminate is ovenized, whereby the resulting laminate is characterized by improved properties.

3,804,694

BINDING APPARATUS

Boyd C. Blair, Topeka, Kans., assignor to Brackett Stripping Machine Co., Inc., Topeka, Kans.

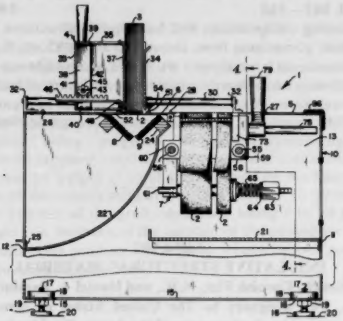
Filed Mar. 20, 1972, Ser. No. 236,110

Int. Cl. B32b *1/04*; **B42x** *19/00*

U.S. Cl. 156—477 B **7 Claims**

A binding apparatus for applying a tape to one edge of a plurality or group of clamped sheets and to adjacent edge portions of exterior surfaces of exterior sheets of the plurality of sheets includes a sheet group receiving carriage and a plate member to position said group of sheets. The carriage member

is adapted to hold and position the sheets to receive a center portion of a pressure sensitive tape on the one edge and adjacent margin portions of the tape on exterior surfaces of exterior sheets in response to movement of a tape applicator and frame having members operative to apply tape to the one edge



of the group of sheets and to cut the tape after applying same and members positioned to engage the tape and move respective opposite margin portions thereof into engagement with the exterior surfaces of exterior sheets in response to release of the plurality or clamped group of sheets.

3,804,695

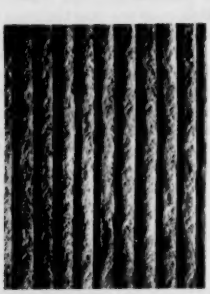
APPARATUS FOR MAKING TOBACCO SMOKE FILTERS

John Courtright Randall, and Charles Herbert Keith, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 737,519, June 17, 1968, abandoned. This application Mar. 25, 1971, Ser. No. 128,117

Int. Cl. D04h *3/08*

U.S. Cl. 156—441 **3 Claims**



Improved aerosol filters, particularly cigarette filters, are prepared by imparting a patterned surface, preferably a plurality of longitudinal grooves, to a web of a synthetic thermoplastic fibrous material, preferably a tow of longitudinally aligned crimped continuous cellulose acetate filaments, and forming the resultant patterned web into a filter of the desired form.

3,804,696

APPLICATOR CAR FOR FLOWABLE MATERIAL

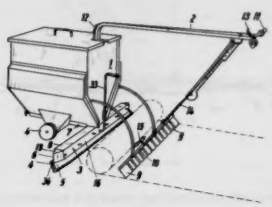
Albert X. Lobmeier, 46 Dorlmund-Hombruch, Foschloch, Germany

Filed Feb. 29, 1972, Ser. No. 230,282

Claims priority, application Germany, Mar. 4, 1971, 2110240

Int. Cl. E04d *5/04, 5/06, 5/07*

U.S. Cl. 156—499 **9 Claims**



An applicator machine for applying bitumen, adhesive, varnishes or highly viscous materials to a surface or roof comprises a wheeled frame having a storage tank for the flowable material and a transversely extending application means for applying the material to the surface. The wheels may be coated with silicone rubber to prevent adhesion of the applied material to the wheels. The application means includes a transversely extending distribution channel which is formed by a pair of rubber apron side walls defining an open slot at the lower ends thereof through which the material flows to the roof surface. To assure flow of material into the uphill section of the distribution channel when the machine is on a sloped roof, a valve means may be operated to direct the flow of material section of the channel means. Also, to assist working on sloped roofs, the application chamber may be pivoted in relationship to the tank.

3,804,697

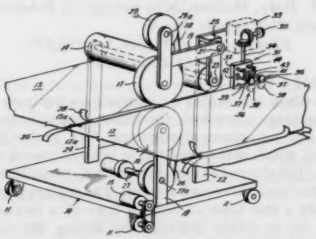
MOVEABLE HEAT SEALING APPARATUS

William I. Jacobi, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed Nov. 24, 1969, Ser. No. 879,199

Int. Cl. B32b *31/00*

U.S. Cl. 156—582 **6 Claims**



A machine for heat sealing two sheets of material together, provided with a pair of cooperating heat wheels forming a sealing nip zone, a support for a sheet of material and supports for strips of sealing tape to be utilized in the sealing operation, together with an edge guide assembly to guide another sheet of material into proper position for joining to a sheet of material carried by the machine.

3,804,698

ADHESIVELY RELEASABLE AND REUSABLE SHOCK LOAD ABSORBING SYSTEM

James C. Kinloch, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1970, Ser. No. 40,143
Int. Cl. A62b *35/00*; **B64d** *17/30*
U.S. Cl. 161—7 **7 Claims**

A shock-absorbing strap system including a tensile load-bearing basic strap which has a looped portion secured by an adhesive connection designed to fail in above-load conditions to absorb the initial shock before transferring the load to the basic strap.

3,804,699

SLIP-RESISTANT MAT

Donald C. Johnson, Fremont, Ohio, assignor to Ludlow Corporation, Needham Heights, Mass.

Filed June 25, 1971, Ser. No. 156,764
Int. Cl. A47g *27/02*; **B32b** *5/18*; **B60r** *3/04*
U.S. Cl. 161—39 **6 Claims**

A mat especially useful for protecting carpeted surfaces from dirt, moisture, or wear. The mat consists of a carpeting fabric bonded to a slit foam, e.g., polyurethane foam, by a quantity of bonding resin composition which is characterized by its weight and limited flexibility. A convenient bonding resin composition is that of the type based on plastisols of poly(vinylchloride) in a quantity of from at least 2 lbs. per square yard of mat.

3,804,700

DECORATIVE LAMINATE

Charles E. Hoey, Marlton, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 10, 1972, Ser. No. 255,879
Int. Cl. B32b *3/26*
U.S. Cl. 161—160 **4 Claims**

A procedure is provided for producing a laminate having a textile backing, a crushed, thermoset plastic foam bonded thereto, and a transparent polymeric film, preferably also a thermoset, which may be printed or colored overall overlying the foam. The structure is self-bonded, i.e., no adhesive is used to bond the laminate to one another. The preferred procedure is to apply a thin layer of foamed latex of a thermosettable polymer on a textile followed by drying the foam, the thickness of the foam being between about 10 mils and 150 mils. The transparent film, preferably thermosetting, is suitably formed by casting a latex upon a release surface such as silicone release paper and drying the same without causing thermosetting (if a thermosettable polymer is utilized). The dry film, still on the release paper, is then suitably coated or printed with a decorative design. The decorated side of the film is then placed against the dried foam layer and bonded thereto by pressure. The thermosetting may be done simultaneously with bonding or subsequently thereto.

3,804,701

INSULATING COMPOSITIONS AND STRUCTURES FORMED THEREFROM FOR USE IN HOT TOPPING COMPRISING FIBROUS WOLLASTONITE

James A. Bognar, North Olmsted, Ohio, assignor to Oglebay Norton Company, County of Cuyahoga, Ohio

Filed Aug. 6, 1973, Ser. No. 385,994
Int. Cl. B28b *7/36*; **B32b** *19/02*; **C08g** *51/18*
U.S. Cl. 161—165 **14 Claims**

Insulating compositions and hot topping structures formed therefrom comprising from about 5 to about 95 wt. % fibrous Wollastonite; at least about 3 wt. % of a second fibrous material which may be inorganic, organic, or a mixture of both; from 0 to about 90 wt. % of an inorganic particulate filler; and from about 2 to about 8 wt. % of an inorganic or organic binder.

3,804,702

INSULATIVE STRUCTURAL MATERIAL

North Smith, Cornish Flat, N.H., and Daniel A. Pazsint, Wampum, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 20, 1972, Ser. No. 264,638
Int. Cl. B32b *5/16*, *5/18*
U.S. Cl. 161—168 **6 Claims**

An insulative, solid structural material consisting of an expanded polystyrene bead aggregate bound into a rigid cohesive unit by elemental sulfur. Molten sulfur, at a temperature below 120°C., is added to the pre-expanded polystyrene bead aggregate in a mold and allowed to cool and solidify. The sulfur binds tightly to the aggregate, fills the spaces between the aggregate and forms a finished surface that acts as a moisture barrier.

3,804,703

GLASS-TO-METAL SEALS COMPRISING RELATIVELY HIGH EXPANSION METALS

Chikara Hirayama, Murrysville, Pa., assignor to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 21, 1970, Ser. No. 30,498
Int. Cl. B32b *17/06*
U.S. Cl. 161—196 **3 Claims**

A moisture resistant solder glass characterized by a linear coefficient of expansion of from about 12 to 14 $\times 10^{-6}$/°C between room temperature and 500°C and consisting essentially of, by molar percent, about 9% of K_2O, about 10% of Na_2O, about 70% of SiO_2, about 6% Al_2O_3, and about 5% of MgO.

3,804,704

MICA PAPER LAMINATES

Richard J. Ketterer, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,645
Int. Cl. B32b *13/04*
U.S. Cl. 161—206 **3 Claims**

The addition of silyl peroxide to mica paper laminates substantially raises their water resistance, increasing their usefulness under conditions where water is present.

3,804,705

MULTI-LAYER PRODUCT HAVING A PROTECTIVE LAYER CONTAINING A BLEND OF POLYMERS

Hiroshi Kishikawa, Toyonaka; Kiyoshi Yasuno, Ibaragi, and Shuji Kitamura, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Filed Dec. 29, 1971, Ser. No. 213,810
Claims priority, application Japan, Dec. 29, 1970, 45-124414
Int. Cl. B32b *27/08*; B44d *1/09*
U.S. Cl. 161—253 14 Claims

A multi-layer product which comprises a layer made of a synthetic resin and a protective layer made of an acrylic resin incorporated with ethylene:vinyl acetate copolymervinyl chloride graft copolymer adhered thereon, the graft copolymer being prepared by graft-polymerizing vinyl chloride on ethylene:vinyl acetate copolymer containing 20 to 60 percent by weight of vinyl acetate unit (on the basis of the amount of the copolymer) at a weight ratio of 10:90 to 90:10 and the content of the graft copolymer being 1 to 50 percent by weight (on the basis of the amount of the protective layer). The multi-layer product has a good weather-proof property, and a beautiful appearance.

3,804,706

INORGANIC FIBER BOARD WITH BINDER OF THERMOSETTING RESIN AND THERMOPLASTIC VINYLIC RESIN

Hirotoshi Kurashige, and Kiyonobu Fujii, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Filed July 26, 1971, Ser. No. 166,307
Claims priority, application Japan, July 29, 1970, 45-66218
Int. Cl. D21h *3/36, 3/50*
U.S. Cl. 162—109 10 Claims

An inorganic fiber board having improved high resistance to splitting the board parallel to the plane of the board and an apparent density of from about 0.3 g/cm³ to 1.0 g/cm³ is produced by mixing 100 weight parts of an inorganic material consisting of 40–98 weight parts rock wool or slag wool, 2–30 weight parts asbestos and 0–50 weight parts of an inorganic filler with a binder of an aqueous emulsion of 3–25 weight parts (based on 100 weight parts of inorganic materials) of a thermosetting resin and 0.3–10 weight parts of a thermoplastic vinyl resin to obtain a slurry; dewatering the slurry on the screen to obtain a wet laid mat; and then drying and curing the mat to convert the thermosetting resin to an insoluble and infusible state. A surface decorated board is obtained by mixing vermiculite particles in the inorganic material. Another embodiment of a surface decorated board having a fine uneven crepe like pattern is obtained by rubbing the surface of a wet laid mat and applying suction to the other side of the mat repeatedly.

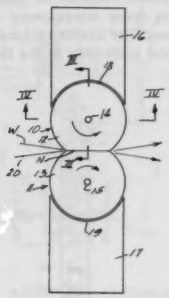
3,804,707

PAPERMAKING PRESS WITH INFLATABLE ROLLS HAVING THIN DEFORMABLE OUTER SHELLS

William C. Mohr, Rockford, and Carl J. Francik, Roscoe, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 8, 1972, Ser. No. 232,820
Int. Cl. D21f *3/08*
U.S. Cl. 162—358 9 Claims

An extended nip is created in a papermaking roll press assembly whereby the rolls are provided with thin, deformable outer shells and fixed, rigid seal plates in the ends of the shells for holding pressurized fluid within the shells. Separately inflatable annular seals provided between the fixed, end seal plates and the shells also help prevent escape of fluid from within the shells. Support beams extending the length of the



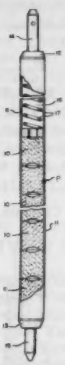
roll shells opposite the nip have perforations therein for allowing fluid to pass between the beams and the rotating outer shells of the rolls for reducing sliding friction.

3,804,708

NUCLEAR REACTOR FUEL ROD

Wesley Gordon Nilson, Nyack, N.Y., assignor to United Nuclear Corporation, Elmsford, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,887
Int. Cl. G21c *3/06*
U.S. Cl. 176—68 6 Claims



A nuclear reactor fuel rod is provided with cladding of zirconium alloy which is especially textured in order to reduce axial irradiation growth and to increase end of life ductility. In particular, the cladding is an elongated tube of zirconium alloy wherein the basal poles of the constituent metal crystals are oriented in directions having their principal components in the radial and axial directions.

3,804,709

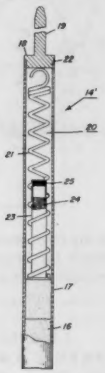
NUCLEAR FUEL ELEMENT

Richard T. Penrose, Santa Clara, and John R. Thompson, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 15, 1972, Ser. No. 253,299
Int. Cl. G21c *3/10, 3/18*
U.S. Cl. 176—68 17 Claims

A method of protecting the cladding of a nuclear fuel element from internal attack and a nuclear fuel element for use in

the core of a nuclear reactor is disclosed. The nuclear fuel element has disposed therein an additive of a barium-containing material and the barium-containing material collects reactive gases through chemical reaction or adsorption at temperatures ranging from room temperature up to fuel element plenum temperatures. The additive is located in the plenum of the fuel element and preferably in the form of particles in a



hollow container having a multiplicity of gas permeable openings in one portion of the container with the openings being of a size smaller than the size of the particles. The openings permit gases and liquids entering the plenum to contact the particles. The additive is comprised of elemental barium or a barium alloy containing one or more metals in addition to barium such as aluminum, zirconium, nickel, titanium and combinations thereof.

3,804,710

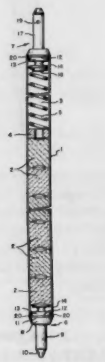
NUCLEAR REACTOR FUEL ELEMENT

Stuart D. Bresnick, West Nyack, N.Y., assignor to United Nuclear Corporation, Elmsford, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,425

Int. Cl. G21c *3/10*

U.S. Cl. 176—79 **4 Claims**



A tubular fuel element having end plugs welded to each end with reproducible high quality welds. The tube contains fissionable fuel in any form but advantageously in the form of pellets partially filling the tube leaving a void space at one end for the reception of the fission gases. A compression spring of nickel, or an alloy of nickel, is located within this space to hold the fuel pellets in position. The end plugs, made of a zirconium alloy, are each provided with a head portion for engaging the fuel at the bottom end and the spring at the top. The surface of the head is spaced a suitable distance from the welded joint at the end of the tube and the head is connected to the inner portion of the end plug by a narrow neck portion. This construction prevents excessive stresses in the weld and adjacent tubing during service, and at the top end prevents the heat of welding from inducing the formation of a brittle nickel-zirconium eutectic in the adjacent materials.

3,804,711

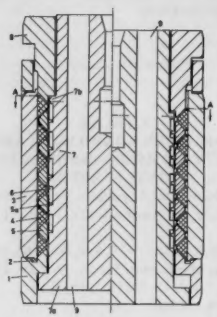
NUCLEAR REACTOR

Donald Stanley Pettinger, and Geoffrey Alfred Roberts, both of Knutsford, England, assignors to The Nuclear Power Group Limited, Knutsford, England

Filed Oct. 20, 1970, Ser. No. 82,298

Int. Cl. G21c *5/08, 5/02, 5/16*

U.S. Cl. 176—84 **9 Claims**



A graphite core for a nuclear reactor comprising an assembly of graphite blocks arranged vertically in spaced columns, each block having means for maintaining it in alignment with adjacent blocks of its column, a layer of spacer blocks supported on top of the core with the individual spacer blocks aligned with the columns, a plurality of laterally displaceable wedges in each spacer block adapted to be displaced laterally to contact directly or indirectly the blocks of adjacent columns said wedges being disposed in at least one ring around the spacer block.

3,804,712

THERMALLY INSULATED PANEL FOR A GAS COOLED NUCLEAR REACTOR

Flaviano Farfaletti-Casali, Milan, Italy, assignor to European Atomic Energy Community (Euratom) Luxemburg (Gfrand-Duchy) European Centre Kirchberg, Luxemburg, Luxembourg

Filed Oct. 19, 1970, Ser. No. 81,812

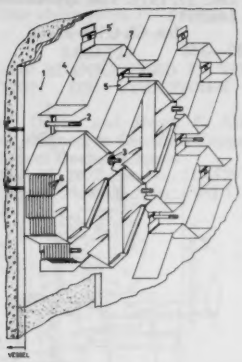
Claims priority, application Luxembourg, Nov. 18, 1969, 59839

Int. Cl. G21c *11/08*

U.S. Cl. 176—87 **11 Claims**

A thermal insulation panel for the interior of a vessel in a gas cooled reactor. A series of metal strips, spaced apart from one another, are bent in a zigzag shape to define between them a plurality of cells. Adjacent metal strips are connected to each other, preferably at places where the distance between the strip is minimal, by metal bridging members. The cells house thermal insulating material which has the same shape as the cells and which is constructed and interconnected with the metal strips to permit thermal expansion of the panel. In one embodiment the insulation includes a plurality of metal insu-

lating sheets while in an alternative embodiment the insulation is made of a fibrous or porous material with a single metal insulating sheet to enclose such material. The metal insulation



has one undulation along a diagonal and at least two undulations perpendicular to the one undulation to permit thermal expansion of the panel.

3,804,713

METHOD FOR THE ATTENUATION OF RUBELLA VIRUS

Hideaki Yaoi, Bodaimachi, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed July 9, 1971, Ser. No. 161,925
Int. Cl. C12k *7/00*
U.S. Cl. 195—1.3 **5 Claims**

Novel highly attenuated live rubella vaccines are produced by at least 10 cultivation passages of rubella virus through primary kidney cells of a guinea pig until sufficient attenuation is attained.

3,804,714

ENZYMIC OXIDATION PROCESS

Edgar Elite Yves Azoulay, Marseille, and Jean-Michel Marie Joseph Lebeault, Lavera, both of France, assignors to The British Petroleum Company Limited, London, England

Filed June 23, 1972, Ser. No. 265,563
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **5 Claims**

Enzymic process for the oxidation of substantially water immiscible or water insoluble hydrocarbons, alcohols or aldehydes using oxidising enzyme extracted from micro-organisms wherein an amide is used to dissolve the hydrocarbon, alcohol or aldehyde and thereafter the solution is dispersed in an aqueous buffer in which the oxidation is effected.

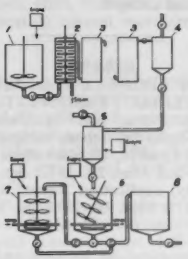
3,804,715

PROCESS FOR PREPARING SUGAR CONTAINING MALTOSE OF HIGH PURITY

Kaname Sugimoto, and Mamoru Hirao, both of Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

Filed Apr. 8, 1970, Ser. No. 26,552
Claims priority, application Japan, Apr. 9, 1969, 44-27543
Int. Cl. C13d *1/00*
U.S. Cl. 195—31 R **12 Claims**

The present invention relates to a process for preparing sugar containing maltose of high purity from starches. More particularly, the invention relates to a process for preparing syrup having a high maltose content or pure maltose by using a



β-amylase enzyme which is a maltose-producing enzyme together with various α-1,6-glucosidases to increase maltose content to higher than 50 percent.

3,804,716

STARCH CONVERSION PRODUCTS AND PROCESSES FOR PREPARING SAME

David P. Langlois, 36 Cammo Grove, Edinburgh EH 4 8Ex, Scotland

No Drawing. Continuation-in-part of abandoned application Ser. No. 38,552, May 18, 1970. This application Jan. 31, 1972, Ser. No. 222,378
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 R **13 Claims**

A novel starch conversion product having at least 80 percent by weight of its saccharide components containing 5 to 12 saccharide units, and being useful for making hard candies and lozenges. The product containing this specific range of saccharide units may be prepared by an enzymolysis process in which inhibited starch particles are suspended in water, heated for a time and at temperatures sufficient to cause swelling of the starch particles, and then hydrolyzed with a specific enzyme which is capable of splitting high molecular weight starch molecules randomly throughout the molecule.

3,804,717

PRODUCTION OF NEW AMYLASES BY CULTIVATION OF STREPTOMYCES AND USES OF THESE NEW AMYLASES

Yoshihisa Koaze and Yutaka Nakajima, Tokyo, Hideimasa Hidaka, Yokohama, Tomizo Niwa, Kawasaki, Takashi Adachi, Yokosuka, Kenji Yoshida, Kawasaki, Jiro Ito, Taro Niida, and Takashi Shomura, Yokohama, and Masahiro Ueda, Kawasaki, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Oct. 20, 1971, Ser. No. 190,962
Claims priority, application Japan, Oct. 27, 1970, 45/93,951
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 **9 Claims**

This invention relates to a process of producing a new amylase by cultivating a strain of the particular seven species of Streptomyces; *Streptomyces albus, Streptomyces aureofaciens, Streptomyces hydroscopicus, Streptomyces hydroscopicus* var. *angustomyceticus, Streptomyces viridochromogenes, Streptomyces flavus* and *Streptomyces tosaensis.* These new amylases produced by the above particular species, respectively have some enzymatic activities and characteristics which are much more useful and advantageous in producing a higher yield of maltose from starch and amylose, as compared to the use of the known amylases. The starch hydrolyzate which is obtained by reacting the new amylase with starch in aqueous dispersion contains a predominant proportion of maltose and is useful as a natural sweetening material.

Further, this starch hydrolyzate mainly composed of maltose is converted into a mixture of sugar alcohols mainly composed of maltitol by hydrogenating in the presence of a nickel catalyst.

3,804,718

METHOD OF PRODUCING β-AMYLASE BY BACTERIAL FERMENTATION

Shigetaka Okada, Nara, and Masataka Higashibara, Todabayashi, Osaka-fu, Japan, assignors to Hayashibara Company, Limited, Okayama-ken, Japan

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,345
Claims priority, application Japan, Apr. 1, 1971, 46/19,870; Sept. 30, 1971, 46/76,484
Int. Cl. C12d *7/02*
U.S. Cl. 195—66 R **5 Claims**

β-Amylase is produced by bacteria and can be recovered from the cell-free broths of their culture media. The bacterial β-amylases are the typical β-amylases and can act on starch, and convert the starch to maltose only.

3,804,719

ADSORBING AND CROSSLINKING ENZYMES WITHIN THE PORES OF POROUS GLASS

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Aug. 7, 1972, Ser. No. 278,269
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 **8 Claims**

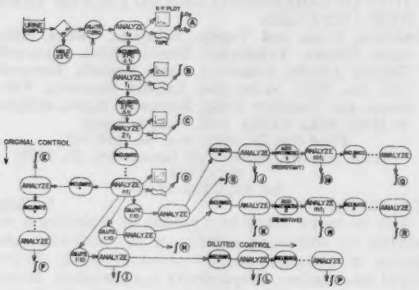
Enzymes are crosslinked within the pores of porous glass with a water insoluble crosslinking agent dissolved in an organic solvent.

3,804,720

DYNAMIC METHOD OF IDENTIFYING MICROBES AND EVALUATING ANTI-MICROBIAL PROCESSES

William A. Curby, 1663 Commonwealth Ave., West Newton, Mass. 02165

Filed May 2, 1972, Ser. No. 249,601
Int. Cl. C12k *1/00*
U.S. Cl. 195—103.5 R **13 Claims**



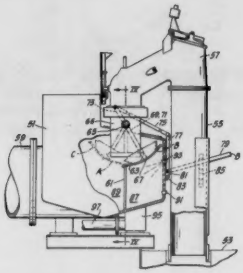
The present invention relates to a new method of identifying a micro-organism and evaluating anti-microbial processes in which a liquid containing a sample of a micro-organism is evaluated in a multichannel analyzer to determine its dynamic growth profile as expressed in terms of total count and size distribution of the microbe population.

3,804,721

DIVIDED COLLECTING MAIN FOR COKE OVEN

Ward F. Gidick, West Newton, Pa., assignor to Koppers Company, Inc.

Continuation-in-part of abandoned application Ser. No. 212,479, Dec. 27, 1971. This application Apr. 21, 1972, Ser. No. 246,241
Int. Cl. C10b *27/06*
U.S. Cl. 202—256 **7 Claims**



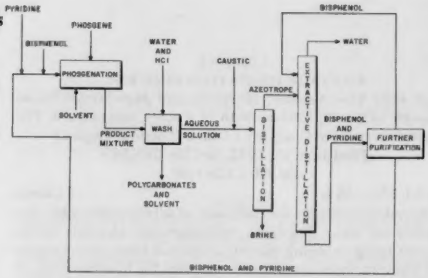
A collecting main for a coke oven battery has a longitudinally extending internal baffle so that clear liquor and dirty liquor can be separately collected in the same collecting main.

3,804,722

EXTRACTIVE DISTILLATION OF PYRIDINE-WATER AZEOTROPE WITH A BISPHENOL

Earl D. Oliver, Los Altos, Calif., assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Sept. 11, 1970, Ser. No. 71,333
Int. Cl. B01d *3/40;* **C07d** *3/16, 3/20*
U.S. Cl. 203—14 **4 Claims**



A pyridine-water azeotropic mixture is resolved by extractively distilling same with bisphenol compounds or distilling same with caustic.

3,804,723

PURIFICATION OF BETA-NAPHTHOL BY STEAM DISTILLATION

John Peter Dundon, North Branch, Herbert Rudolph Kemme, Flemington, and Edward Jonathan Scharf, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 29, 1973, Ser. No. 327,350
Int. Cl. B01d *3/38;* **C07c** *37/22*
U.S. Cl. 203—92 **5 Claims**

Non-phenolic impurities, particularly 2-methyl-naphthofuran, contained in beta-naphthol produced by the hydro-

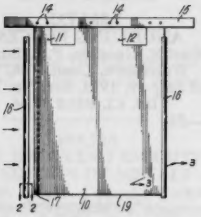
peroxide-oxidation cleavage process, are substantially completely removed by (1) forming a single phase mixture of the beta-naphthol product and water, at a temperature of at least 190° C., and (2) subjecting the mixture to steam distillation at a temperature above 190° C. and at an autogenous pressure above about 175 p.s.i.g.

3,804,724

PRODUCTION OF BLANKS USED IN THE ELECTRODEPOSITION OF STRIPPABLE METAL COATINGS

Justin C. Bolger, Dover, and Henry E. Molvar, Jr., Billerica, Mass., assignors to Canadian Copper Refiners Limited, Province of Quebec, Canada

Filed Dec. 11, 1972, Ser. No. 313,839
Inc. Cl. C23b *7/08;* **B01k** *1/00;* **C09j** *5/02*
U.S. Cl. 204—12 **23 Claims**



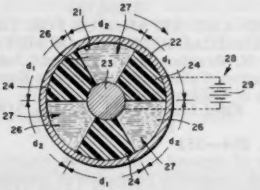
Considerably improved metal blanks are produced when edge strips made of non-conductive synthetic plastic material are bonded to the edges of such blanks using an adhesive composition based on liquid bis-phenol A type epoxy resin and dicyandiamide curing agent. Such blanks are used in the electrodeposition of strippable metal coatings such as copper cathode starting sheets.

3,804,725

METHODS AND APPARATUS FOR TREATING AN ARTICLE

Richard Haynes, East Windsor, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,479
Int. Cl. B01k *3/00;* **C23b** *5/56*
U.S. Cl. 204—26 **27 Claims**



An article is treated in the presence of an electrolyte and an electrode, for example, in electroplating the inner wall of a tube. A constant electrical potential difference is applied continuously across the article and the electrode within the electrolyte. A dielectric blocking element engages a portion of the article in such manner as to interrupt the flow of treating current by shielding the portion from substantial exposure to the electrolyte. The blocking element is alternatively disengaged from, and reengaged with, the portion of the article undergoing treatment, providing a pulsed effect in the application of treating current without the utilization of any electrical switching mechanism. An appropriate selection of blocking element shapes, sizes, numbers and spacings permits control of the treating current waveform.

3,804,726

ELECTROPLATING PROCESSES AND COMPOSITIONS

Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Filed April 23, 1973, Ser. No. 353,310
Int. Cl. C23b *5/08, 5/32, 5/46*
U.S. Cl. 204—43 T **23 Claims**

This invention relates to a process and composition for the preparation of an electrodeposit which contains at least one metal selected from the group consisting of nickel and cobalt and which also may contain iron, which comprises passing current from an anode to a cathode through an aqueous plating solution containing at least one member selected from the group consisting of cobalt compounds and nickel compounds and which may also contain iron compounds to provide cobalt, nickel and ferrous ions for electrodepositing cobalt, nickel, nickel-cobalt alloys, nickel-iron alloys, or nickel-cobalt-iron alloys the improvement comprising the presence of an effective amount of boric acid and at least one member selected from the group consisting of mannitol, sorbitol, and dulcitol in a single or combined concentration of 2 grams per liter to 100 grams per liter for a time period sufficient to form a sound metal electroplate upon said cathode surface.

3,804,727

ELECTRODEPOSITION OF NICKEL

Derek Martin Lyde, Stourbridge, England, assignor to Albright & Wilson Limited, Oldbury, Warley, Worcestershire, England

No Drawing. Continuation-in-part of application Ser. No. 108,210, Jan. 20, 1971, now Patent No. 3,711,384. This application Dec. 1, 1971, Ser. No. 203,850
The portion of the term of the patent subsequent to Jan. 16, 1990, has been disclaimed
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 **15 Claims**

A Watts bright nickel electroplating bath consisting of from 0.1 to 1 g./l. of a mixture of acetylenic compounds including both an α-hydroxy-acetylenic compound and an alkylene oxide condensation product of an α-hydroxy-acetylenic compound in a weight ratio of the said condensation product to the α-hydroxy-acetylenic compounds of from 1.5:1 to 7:1, and 0.2 or 0.5 g./l. of saccharin.

3,804,728

NOVEL CHROMIUM PLATING COMPOSITIONS

Hyman Chessin, Birmingham, Mich., and Maurice Philip Best, Streetly, England, assignors to M & T Chemicals, Inc., Greenwich, Conn.

No Drawing. Continuation-in-part of application Ser. No. 154,703, June 18, 1971. This application June 12, 1972, Ser. No. 262,151
Int. Cl. C23b *5/06*
U.S. Cl. 204—51 **12 Claims**

This invention relates to novel compositions and to a process for electroplating chromium plate onto a basis metal which comprises passing current from an anode to a cathode at least a portion of which contains a conductive metal layer through an aqueous acidic chromium plating solution containing:

(1) at least one chromium compound providing hexavalent chromium ions for electroplating chromium; at least one catalyst selected from the group comprising sulfate ions, complex fluoride ions and fluoride ions;

(2) at least one member of the group consisting of sulfoacetate and sulfoacetic acid, isethionate and isethionic acid, and

(3) at least one soluble compound containing selenium;

for a time sufficient to deposit a chromium electroplate having a thickness of at least 1×10^{-4} millimeter.

3,804,729

ELECTROLYTE AND PROCESS FOR ELECTRODEPOSITING COPPER

Otto Kardos, Ferndale, and Silvester P. Valayil and Donald A. Arcilesi, Detroit, Mich., assignors to M & T Chemicals Inc., Greenwich, Conn.

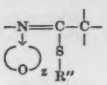
No Drawing. Filed June 19, 1972, Ser. No. 264,193
Int. Cl. C23b *5/20, 5/46*
U.S. Cl. 204—52 R 46 Claims

In accordance with certain of its aspects, this invention relates to novel compositions and to a process for electrodepositing bright, strongly leveled, ductile copper from an aqueous acidic copper plating bath containing chloride ions and at least one member independently selected from each of the following groups:

(A) a polysulfide compound of the formula

$$R'-(S)_n-R-SO_3M;$$

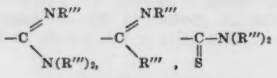
(B) a heterocyclic sulfur compound containing the grouping



and/or tautomers thereof, where the nitrogen atom and the two carbon atoms are part of a heterocyclic ring; and

(C) a polyether containing at least 5 ether oxygen atoms per molecule;

wherein R is independently a divalent aliphatic or aromatic non-heterocyclic group of 1–10 carbon atom; R' is hydrogen, a metal cation, a monovalent aliphatic or aromatic group of 1–20 carbon atoms, or the groups $-R-SC_3M$ or $-R-(S)_q-RSO_3M$ wherein q is an integer 2–5; M is a cation; Z is 0 or 1; R'' is hydrogen, a metal ion or one of the groups



where R''' is hydrogen, an alkyl group of 1–6 carbon atoms, aryl, alkaryl or aralkyl group.

3,804,730

CONTROL OF ELECTROLYTIC COLORING OF CHROMIUM-CONTAINING ALLOYS

Thomas Ernest Evans, Warwickshire, and William Heald Sutton, Birmingham, England, assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed April 9, 1973, Ser. No. 349,114
Claims priority, application Great Britain, April 18, 1972, 17,941/72
Int. Cl. C23b *11/02*
U.S. Cl. 204—56 R 8 Claims

A process for coloring stainless steel and other chromium-containing alloys comprising anodically treating the metal to be colored in an acid chromate electrolyte and removing the metal from the electrolyte when the metal-electrolyte potential relative to a reference electrode reaches a predetermined value.

3,804,731

PROCESS FOR FORMING HARD ANODIC OXIDE FILM ON ALUMINUM BASE ALLOY

Kiyomi Yanagida and Tadashi Tsukiyasu, Nagoya, and Seitaro Iwata, Ibaragi, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Sept. 1, 1972, Ser. No. 285,595
Claims priority, application Japan, Sept. 7, 1971, 46/69,528
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 6 Claims

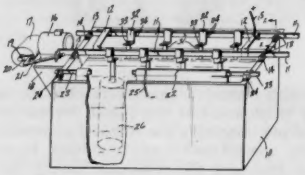
A hard anodic oxide film is formed uniformly on an aluminum base alloy containing 1% by weight or more of copper by subjecting the aluminum base alloy to anodic oxidation using an electrolyte comprising an aqueous solution containing 5 to 40% by weight of an aromatic sulfonic acid such as sulfosalicylic acid, napthalenedisulfonic acid, naphthalene-trisulfonic acid, phenol sulfonic acid and sulfophthalic acid, and 15 to 40% by weight of sulfuric acid.

3,804,732

ANODIZING PROCESS

Albert R. Goodkin, P.O. Box 136, Watertown, Conn. 06795

Filed July 19, 1971, Ser. No. 163,610
Int. Cl. B01d *3/34*
U.S. Cl. 204—58 4 Claims



Novel process for the bulk anodizing of small metal articles, wherein the articles, grouped in spaced containers suspended from an anode bar or from a plurality of anode bars, are continually reciprocated through the electrolyte bath during treatment. The bath, preferably a 15% to 20% by weight aqueous solution of sulfuric acid, is maintained at below ordinary room temperatures, preferably at 55° to 60° F. Anodized coatings of increased uniformity are thus obtained, and the useful life of the solution is extended about tenfold, as compared with procedures of the prior art.

3,804,733

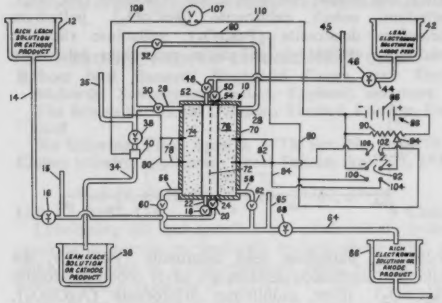
METHOD AND APPARATUS FOR THE ELECTROCHEMICAL REMOVAL OF METAL IONS

Douglas N. Bennion, Sepulveda, and John S. Newman, Kensington, Calif., assignors to The Regents of the University of California

Filed Jan. 2, 1973, Ser. No. 319,993
Int. Cl. C02c *5/12*
U.S. Cl. 204—151 13 Claims

A pair of opposed inert, porous, electrically conducting electrodes, preferably composed of inexpensive flakes and chips of carbon, are provided with a potential difference therebetween so that one (the anode) is positive relative to the other (the cathode). The porous anode is also provided with copper in ionizable form. A solution to be purified is passed through the cathode while an electrolyte, possibly a portion of the same solution or a mixture thereof, is passed through the anode whereby solutions in the cathode and anode are electrolyzed (becoming catholyte and anolite, respectively) causing removal of metal ions more noble to hydrogen in the electromotive series from the catholyte and an addition of at least copper to the anolyte to provide a purified effluent from the cathode and

an enriched effluent from the anode. Upon saturation of the cathode with the accumulated deposited metal ions, the cell is regenerated by continued operation with the



potential to the electrodes reversed and the feed solution to the cell reversed so that the role of the electrodes is reversed.

3,804,734

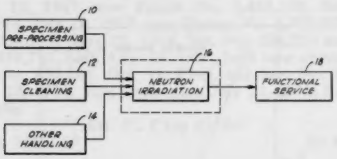
METHOD FOR REDUCING EMBRITTLEMENT CONDITION OF METALS

Gordon L. Richard, 217 W. Coe, and Robert W. Blosser, 3620 Oak Grove Drive, both of Midwest City, Okla. 73110

Continuation-in-part of abandoned application Ser. No. 844,579, July 24, 1969. This application April 19, 1972, Ser. No. 245,643

Int. Cl. B01j *1/10*

U.S. Cl. 204—157.1 H **12 Claims**



A method for reducing the condition of embrittlement in a metal specimen by irradiating the specimen with a neutron flux of selected density. The method consists of placing a metal specimen in view of neutron radiation for a pre-determined period of time in order to alleviate any embrittlement condition and/or to reduce likelihood of such condition at a later time, such neutron irradiation tending to rearrange the interstitial makeup of the metal specimen, e.g. by bringing about dissociation of diatomic or molecular hydrogen to its monatomic state.

3,804,735

PHOTOPOLYMERIZABLE COMPOSITIONS PREPARED FROM BETA-HYDROXY ESTERS AND POLYITACONATES

Sol B. Radlove, Chicago, Abraham Ravve, Lincolnwood, and Kenneth H. Brown, Chicago, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed April 10, 1972, Ser. No. 242,793

Int. Cl. C08d *1/00*; C08f *1/16*

U.S. Cl. 204—159.23 **17 Claims**

A photopolymerizable composition comprised of a major amount of beta-hydroxyester and a minor amount of a polymerizable ester derived from itaconic acid. Optionally the compositions contain a polyacrylate and a photosensitizer.

The photopolymerizable compositions are useful in the preparation of vehicles for printing inks which when printed on a substrate dry rapidly under irradiation with ultraviolet light. Superior adhesion of the compositions to metal surfaces is obtained by heating the irradiated composition.

3,804,736

PHOTOPOLYMERIZABLE POLYESTER COMPOSITIONS

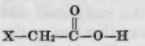
George Pasternack, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,573

Int. Cl. C08d *1/00*; C08f *1/16*

U.S. Cl. 204—159.23 **12 Claims**

A photopolymerizable composition comprised of a mixture of (1) a polyacrylate prepared by reacting (a) a polyacetate condensation product of a polyester having an excess of hydroxyl groups and a substituted acetic acid having the formula



where X is an electron withdrawing group and (b) an aldehyde having the formula R—CHO where R is hydrogen, alkyl, aryl or furyl, the polyester being prepared from the condensation of a saturated polyhydric alcohol and a saturated dicarboxylic acid, (2) a polymerizable unsaturated polyester prepared from a polyhydric alcohol and an alpha, beta-ethylenically unsaturated monocarboxylic acid and (3) a photosensitizer such as a chlorinated polyphenyl.

The photopolymerizable compositions are useful in the preparation of vehicles for printing inks which when printed on a substrate dry rapidly to a non-offsetting condition under irradiation with ultraviolet light.

3,804,737

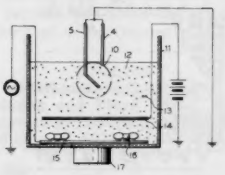
METHOD FOR COATING ELECTRONIC COMPONENTS

Akihiro Ohkuma, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Nov. 16, 1971, Ser. No. 199,210

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **12 Claims**



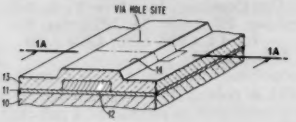
A method for coating an electronic component having at least one lead wire attached thereto. The electronic component is immersed in an insulating liquid having fine particles of resin dispersed therein so that a part of the lead wire extends above the surface of the insulating liquid. A high electric potential is imposed across the lead wire and an electrode inserted at a bottom position of the insulating liquid for a given time period, whereby the fine particles of resin move toward the electronic component electrophoretically and cover the surface of the electronic component. The resin particle covered electronic component is withdrawn from the insulating liquid, and the insulating liquid remaining on the surface of the resin particle covered electronic component is evaporated. The fine particles of resin are cured to form a resin coating on both the surface of the electronic component and the part of the lead wire which was immersed.

3,804,738

PARTIAL PLANARIZATION OF ELECTRICALLY INSULATIVE FILMS BY RESPUTTERING

John S. Lechaton, Wappingers Falls, Leo P. Richard, Hyde Park, and Daryl C. Smith, Newburgh, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,298
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **15 Claims**



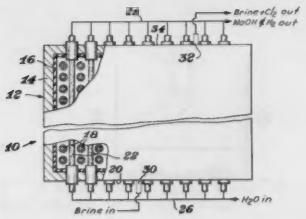
A method of partially planarizing an electrically insulative layer over an integrated circuit substrate which has a raised line metallization pattern having narrower lines and wider lines. The insulative layer has narrower and wider elevations corresponding to the underlying lines. Resputtering of said insulative layer is conducted for an amount of time sufficient to planarize the narrower elevations in the layer but insufficient to so planarize its wider elevations. This method is useful in planarizing insulative layer elevations through which via holes are to be formed, particularly via holes which are wider than the underlying metallizing lines which they contact. Such a planarization method in via hole formation avoids the tunneling effects which would otherwise result from the over-chemical etching necessary to form the via holes.

3,804,739

ELECTROLYTIC CELL INCLUDING ARRAYS OF TUBULAR ANODE AND DIAPHRAGM COVERED TUBULAR CATHODE MEMBERS

Grafton L. Bergeron, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed March 5, 1973, Ser. No. 337,865
Int. Cl. B01k *3/10*
U.S. Cl. 204—266 **9 Claims**



The invention is a novel electrolytic cell assembly using tubular electrodes which allow greater production per unit of cell volume than do conventional electrolytic cells. Dimensionally stable anodes are used. The tubular cathodes adapt readily to the use of ion exchange diaphragms. The anodes and cathodes may be disposed parallel to or at an angle with respect to each other.

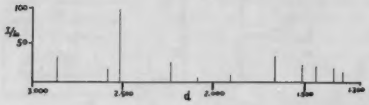
3,804,740

ELECTRODES HAVING A DELAFOSSITE SURFACE

Cletus N. Welch, Barberton, Ohio, assignor to Nora International Company, Panama, Panama

Filed Feb. 1, 1972, Ser. No. 222,501
Int. Cl. B01k *3/06;* **C01b** *7/06, 11/26*
U.S. Cl. 204—290 R **3 Claims**

Electrodes useful for electrochemical reactions are disclosed. Also disclosed are electrolytic cells utilizing such electrodes and the use of such electrodes in the conduct of electrochemical reactions. The electrodes have delafossite surfaces on suitable electroconductive bases. Delafossites are electroconductive oxycompounds of metals and include platinum cobalt delafossite ($PtCoO_2$), palladium cobalt delafossite ($PdCoO_2$), palladium chromium delafossite ($PdCrO_2$), palladium rhodium delafossite ($PdRhO_2$), palladium ruthenium delafossite



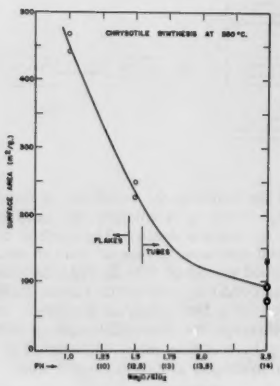
($PdRuO_2$), palladium lead delafossite ($PdPbO_2$), the palladium lanthanide delafossites, silver cobalt delafossite ($AgCoO_2$), silver gadolinium delafosssite ($AgGaO_2$), silver scandium delafossite ($AgScO_2$), silver indium delafossite ($AgInO_2$), silver thallium delafossite ($AgTlO_2$), copper cobalt delafossite ($CuCoO_2$) and copper iron delafossite ($CuFeO_2$), includnig the mineral delafossite ($CuFeO_2$).

3,804,741

HYDROCARBON CONVERSION AND HYDROCRACKING WITH LAYERED COMPLEX METAL SILICATE AND CHRYSOTILE COMPOSITIONS

Harry E. Robson, Baton Rouge, La., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Original application Aug. 31, 1970, Ser. No. 68,324, now Patent No. 3,729,429, dated April 24, 1973. Divided and this application Mar. 9, 1972, Ser. No. 233,368
Int. Cl. B01j *11/22;* **C10g** *11/00, 13/02*
U.S. Cl. 208—110 **86 Claims**



A new and improved process for the preparation of layered complex metal silicates, especially chrysotiles, at low severity conditions. These crystalline forms of complex metal silicate, for shape ranging from thick wall tubes through thin wall tubes, and thin wall tubes through flakes, can be produced, with high surface area, as desired, in hydrated form, by contact of suitable silica and metal sources in a reaction or synthesis mixture at pH of at least about 10, and preferably from about 12 to 14, at moderate temperatures and pressures. The process can produce chrysotiles, some of which have been found to exist in nature, or heterfore synthetically produced, but can as well produce chrysotile species which differ chemically or physi-

cally, or both, from previously known species. New and novel forms of chrysotile are improved in many of their physical and chemical characteristics as contrasted with previous species, and are particularly useful directly or indirectly in conducting hydrocarbon conversion reactions.

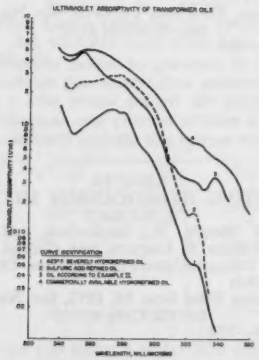
3,804,742
PRODUCTION OF LUBRICATING OILS
Robert Neil Bennett, Englefield Green, and David Richards, Sunbury-on-Thames, England, assignors to The British Petroleum Company Limited, London, England
No Drawing. Filed April 2, 1973, Ser. No. 346,855
Claims priority, application Great Britain, April 17, 1972, 17,565/72
Int. Cl. C01b *33/28;* **C10g** *13/02, 37/10*
U.S. Cl. 208—111 **9 Claims**

Lubricating oil and gasoline are produced by hydrocracking a petroleum feedstock boiling above 350° C. using a catalyst of a hydrogenating metal and an alkali metal deficient faujasite at 350–450° C. and 70–265 bars gauge in the presence of NH_3 and H_2S which are preferably produced by using a N&S containing feedstock.

The preferred faujasite contains an alkaline earth metal, particularly magnesium and the preferred hydrogenating metal is 0.01–5% wt. of Pt group metal. The conversion may be from 40–95% wt., particularly 60–95% wt.

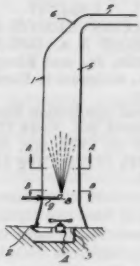
The NH_3 and H_2S may be produced from the feedstock in situ or preferably by a preliminary denitrogenation and desulphurization with the total effluent passing to the hydrocracking zone.

3,804,743
PROCESS FOR PRODUCING BLENDED PETROLEUM OIL
Ivor W. Mills, Media, and Glenn R. Dimeler, West Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Continuation-in-part of applications Ser. No. 622,398, Mar. 13, 1967, now Patent No. 3,462,358, Ser. No. 652,026, July 10, 1967, now Patent No. 3,502,567, Ser. No. 730,999, May 22, 1968, Ser. No. 850,716 and Ser. No. 850,717, both Aug. 18, 1969, both now abandoned, Ser. No. 873,008, Oct. 31, 1969, and Ser. No. 22,295, Mar. 24, 1970. This application July 22, 1971, Ser. No. 165,006
Int. Cl. C10g *41/00*
U.S. Cl. 208—19 **16 Claims**


ULTRAVIOLET ABSORPTIVITY OF TRANSFORMER OILS
CURVE IDENTIFICATION
1. SEPT. BEAVERLY HYDROREFINED OIL
2. SULFURIC ACID REFINED OIL
3. OIL ACCORDING TO EXAMPLE II
4. COMMERCIALLY AVAILABLE HYDROREFINED OIL

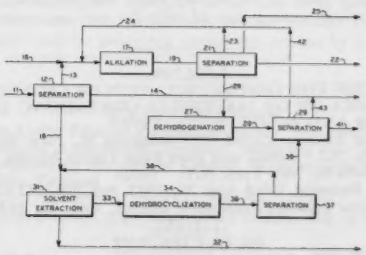
A process for preparing a blended petroleum oil from a hydrogenated petroleum oil having an ultraviolet absorptivity of less than 0.1 in the 330 millimicron region comprises blending from 25–95 parts by weight of said hydrogenated petroleum oil with from 75–5 parts of an unhydrogenated petroleum oil. Preferably, the hydrogenated petroleum oil has a viscosity-gravity constant (VGC) in the range of 0.78–0.94 and the unhydrogenated oil has a VGC in the range of 0.78–0.899. The unhydrogenated oil can be selected from raffinate from solvent extraction of a naphthenic distillate, naphthenic distillate, naphthenic acid-free naphthenic distillate, dewaxed paraffinic distillate, and mixtures thereof. The hydrogenated oil can be hydrorefined paraffinic petroleum oil, hydrorefined naphthenic petroleum oil, hydrocracked petroleum oils, or mixtures thereof. The blend can contain, as an additional component, from 0.1–1 weight percent of a catalytically cracked cycle oil.

3,804,744
PROCESS FOR PRODUCING POWDERED PARAFFIN WAX
Jose Fera, Parana 791, Buenos Aires, Argentina
Filed May 26, 1972, Ser. No. 257,111
Claims priority, application Argentina, June 4, 1971, 235,975, 235,976
Int. Cl. C10g *43/02*
U.S. Cl. 208—24 **1 Claim**



This invention relates to a process for producing powdered paraffin wax, characterized by comprising the steps of heating the liquid paraffin wax to a temperature between 50° C. and 70° C., spraying the liquid paraffin wax into a high velocity flow of cold air, maintaining the mixture until the paraffin wax solidifies, and separating the powdered paraffin wax from the air, discharging the paraffin wax for further operations.

3,804,745
UPGRADING GASOLINE
Lewis E. Drehman and Floyd Farha, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Dec. 27, 1972, Ser. No. 318,706
Int. Cl. C10g *39/00*
U.S. Cl. 208—80 **3 Claims**



An olefinic gasoline is converted to produce higher octane products by alkylating the C_3 fraction, extracting

the C_7 fraction to remove aromatics, dehydrocyclizing the raffinate to produce additional aromatics and cycling at least one material in the C_3 to C_5 range from the dehydrocyclization product to the alkylation step.

3,804,746

HYDROCARBON CONVERSION USING CRYSTALLINE ZEOLITE ZSM-11 CATALYST

Pochen Chu, Woodbury, N.J., assignor to Mobil Oil Corporation

No Drawing. Original application April 23, 1970, Ser. No. 31,421, now Patent No. 3,709,979. Divided and this application May 18, 1972, Ser. No. 254,800

Int. Cl. B01j *9/20;* **C01b** *33/28;* **C10g** *13/02*

U.S. Cl. 208—111 **6 Claims**

Crystalline zeolite ZSM-11 is disclosed as a useful catalyst for a wide variety of hydrocarbon conversion processes, including cracking, hydrocracking, reforming, hydroisomerization, olefin isomerization, hydrogenation-dehydrogenation and desulfurization reactions. The family of ZSM-11 crystalline zeolites are characterized by a cation of a quaternary metal.

3,804,747

HYDROCARBON CONVERSION WITH CATALYST MIXTURE OF X AND Y ZEOLITES

Charles N. Kimberlin, Jr., and Elroy M. Gladrow, East Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Original application Dec. 29, 1969, Ser. No. 888,975, now Patent No. 3,686,121. Divided and this application April 12, 1972, Ser. No. 243,493

Int. Cl. C01b *33/28;* **C10g** *11/00, 13/02*

U.S. Cl. 208—120 **8 Claims**

Improved hydrocarbon conversion process employs a catalyst comprising at least two crystalline aluminosilicate zeolites having essentially the same crystal structures, but having substantially different SiO_2/Al_2O_3 molar ratios. Mixtures of zeolites X and Y are preferred, particularly when embedded in a matrix including clays and/or silica-alumina.

3,804,748

DESULFURIZATION PROCESS

Gerald V. Nelson, Nederland, Tex., and Glenn C. Wray, Dyersburg, Tenn., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 7, 1971, Ser. No. 141,384

Int. Cl. C10g *23/00, 23/02*

U.S. Cl. 208—211 **7 Claims**

Fuel oils of reduced sulfur content are prepared by separating a residue-containing petroleum fraction into a vacuum gas oil and a vacuum residuum, catalytically hydrodesulfurizing the vacuum gas oil in the presence of a catalyst comprising a hydrogenating component on a support, the catalyst having a surface area of at least 250 $m.^2/g.$, a pore volume of at least 0.6 cc./g. and containing at least 2 wt. percent silica and combining the desulfurized vacuum gas oil with the vacuum residuum.

3,804,749

PROCESS FOR DESULFURIZATION OF CHEMICAL MEDIA OR OF MATERIALS CONTAINING SULFUR AND/OR ITS DERIVATIVES

Prosper Etienne Cholet, 273 Sandford St., New Brunswick, N.J. 08902, and Jean Rene Lucien Martin, 430 E. 86th St., New York, N.Y. 10028

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,023

Claims priority, application France, Aug. 31, 1971, 7131551

Int. Cl. C10g *19/08*

U.S. Cl. 208—241 **7 Claims**

The invention concerns a process for desulfurization of chemical media or of materials containing sulfur and/or its derivatives wherein said media or materials to be desulfurized are contacted with a coordination complex of BF_3 in solution in a solvent and said media or said materials are separated from said solution.

3,804,750

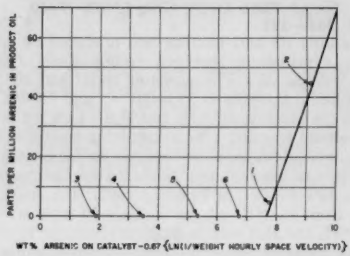
SHALE OIL TREATMENT

Gary A. Myers, Plano, and Donald K. Wunderlich, Richardson, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,625

Int. Cl. C10g *17/00*

U.S. Cl. 208—253 **12 Claims**



A method for removing arsenic from shale oil by contacting the oil with a mixture of nickel sulfide and molybdenum sulfide, employing an elevated temperature and reducing atmosphere for said contacting, and terminating the contacting at least by the time that the equivalent of about 7.7 weight percent arsenic at one weight hourly space velocity (WHSV) has been deposited on the sulfide mixture.

ERRATUM

For Class 208—370 see:
Patent No. 3,804,752

3,804,751

DISPOSAL OF WASTES CONTAINING MERCURY

Andrew T. McCord, Snyder, and Louis E. Wagner, Elma, N.Y., assignors to Chem-Trol Pollution Services, Inc., Model City, N.Y.

No Drawing. Filed Jan. 19, 1973, Ser. No. 325,107

Int. Cl. C02b *1/20*

U.S. Cl. 210—50 **11 Claims**

A method of disposing of wastes containing metallic mercury by treating such wastes with sulphuric acid and then neutralizing the treated wastes with a lime slurry to convert the metallic mercury into an insoluble form of mercury under neutral and alkaline conditions.

3,804,752

TRANSPORTING HYDROCARBON MIXTURES AS A SLURRY

La Vaun S. Merrill, Jr., Englewood, and Dennis E. Drayer, William B. Gogarty, and George A. Pouska, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No. Drawing. Filed Sept. 18, 1972, Ser. No. 290,205

Int. Cl. C10g *43/02*

U.S. Cl. 208—370 **38 Claims**

Hydrocarbon mixtures (e.g. crude oil) having an average pour point above the average minimum temperature of a transporting system are effectively transported by first fractionating the mixture into at least a relatively high pour point fraction and a relatively low pour point fraction, congealing the high pour point fraction, e.g. by prilling, dispersing into a water bath, etc., and thereafter slurrying at least a portion of the congealed fraction with

the low pour point fraction and transporting the slurry, preferably in a conduit, at a temperature below about the congelation temperature of the congealed fraction. Fractionation is preferably effected by distillation. Diluents, e.g. low pour point hydrocarbons such as reservoir condensates, can be admixed with the slurry to improve the pumpability thereof. Also, a portion, e.g. up to 50% by volume, of the otherwise high pour point fraction can be cracked during fractionation to improve the fluidity of the slurry.

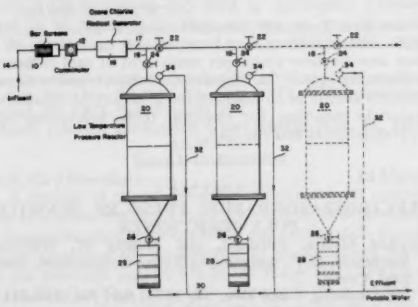
3,804,753
PROCESS OF DEWATERING SEWAGE SLUDGE AND CONVERTING THE SAME TO A USEABLE PRODUCT
Robert E. Baier, Buffalo, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 158,124, June 29, 1971. This application Dec. 7, 1972, Ser. No. 313,071
Int. Cl. B01d *11/04*
U.S. Cl. 210—21 **8 Claims**

A process of dewatering sewage sludge or the like waste and converting the same to a useable product whereby the sludge is placed in a porous container and saturated with a water displacing ingredient such as technical grade butanol, after a period of time sufficient for dehydration to occur, the container pores are closed, and to the sludge is added a polymerizable material for a period of time at an elevated temperature sufficient to permit complete polymerization to occur.

3,804,754
MEMBRANE SEPARATION PROCESS
Kiyoshi Ishii and Syobu Konomi, Saitama, and Yoshio Ishiguro, Tokyo, Japan, assignors to Daicel Ltd., Higashi-ku, Osaka, Japan
No Drawing. Filed Aug. 21, 1972, Ser. No. 282,447
Claims priority, application Japan, Aug. 26, 1971, 46/65,384
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **3 Claims**

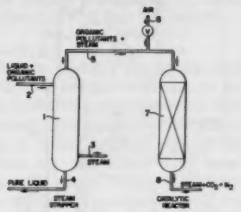
A surfactant is added to an aqueous protein solution undergoing purification or concentration using a semipermeable membrane, in order to improve the water permeation rate of the membrane.

3,804,755
SEWAGE TREATMENT SYSTEM
Luis H. Cervantes, 2373 Bellwood Drive, Pittsburgh, Pa. 15237
Filed Aug. 2, 1971, Ser. No. 167,922
Int. Cl. C02c *1/40;* **C02b** *1/02*
U.S. Cl. 210—50 **6 Claims**



A sewage treatment system wherein raw sewage is treated at relatively low temperatures and pressures to convert the same into potable effluent along with filtratable sludge suitable for fertilizer. The unique simplicity of the system renders the same economical for both institutional and community use.

3,804,756
ENVIRONMENTALLY SAFE DISPOSAL OF ORGANIC POLLUTANTS
James L. Callahan, Bedford Heights, Harley F. Hardman, Lyndhurst, and Robert K. Grasselli, Chagrin Falls, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Filed June 22, 1972, Ser. No. 265,162
Int. Cl. C02b *1/18*
U.S. Cl. 210—59 **8 Claims**



Environmentally dangerous organic pollutants, such as hydrocarbons, alcohols, ethers, aldehydes, ketones, esters, acids, amines and the like are readily disposed of in an ecologically-safe manner by entraining the organic pollutants in a stream containing at least about 90% by volume of steam and passing the stream over an oxidation catalyst at a temperature of 250° to 700° C. The organic pollutants are conveniently converted to harmless nitrogen, water and carbon dioxide and valuable high temperature steam is obtained.

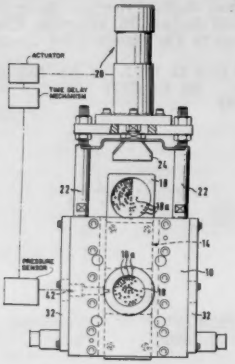
3,804,757
PROCESS FOR TREATING WASTE WATER FROM INDUSTRIAL PROCESSES
Ernst Ruschenburg, Moers, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany
Filed Apr. 24, 1972, Ser. No. 247,123
Claims priority, application Germany, May 11, 1971, P 21 23 218.8
Int. Cl. C02b *1/18*
U.S. Cl. 210—59 **5 Claims**

A process for treating contaminated waste water from manufacturing processes is disclosed. The water contains, for example, hydrogen sulfide, ammonia and phenol in the presence of non-volatile and strongly alkaline ions. An ammonium salt of a strong mineral acid such as ammonium sulfate is added to the contaminated waste water and the ammonia and hydrogen sulfide are stripped away. The phenol separates as an oily layer and may be removed. The ammonium sulfate needed for the process may be generated during the process by treating the stripped ammonia with sulfuric acid.

3,804,758
SCREEN CHANGER
John Leslie Edward Cooper, Denmead, and Peter Alan Morris, Locksheath, England, assignors to Cosham Engineering and Design Limited, Waterlooville, Hampshire, England
Filed Mar. 29, 1972, Ser. No. 227,831
Claims priority, application Great Britain, Aug. 4, 1971, 91,115/71
Int. Cl. B01d *29/02*
U.S. Cl. 210—65 **13 Claims**

A screening device for removing foreign matter from a flowable material and having an arrangement for re-

placing a dirty screen with a clean screen, the device including a body member, a plurality of separate screen blocks one of the blocks being slidably guided to a position across a material passageway through the body while the other block is positioned adjacent the passage within the body,



conduits formed in the body to bleed material from the passage to the other block, a valve for controlling the flow of material through the conduits, and drive means operable to cause the other block to push the one block from its location in the passage so as to replace it therein.

3,804,759

AEROSOL FIRE EXTINGUISHER AND METHOD

James R. Becker, 2984 Essex Road, Cleveland Heights, Ohio 44118, and Richard H. Furlow, 4701 Jefferson St., Midland, Mich. 48640

Original application Dec. 27, 1971, Ser. No. 212,439, now Patent No. 3,721,300, dated Mar. 20, 1973. Divided and this application Jan. 4, 1973, Ser. No. 320,945

Int. Cl. A62d *1/00*

U.S. Cl. 252—8 **6 Claims**

There is provided an improved fire extinguishing composition for dispensing from an aerosol-type container, which composition exists under superatmospheric pressure and is formed from a tetrahalogenated methane containing at least one atom each of chlorine, bromine, and fluorine, a second tetrahalogenated methane in which the halogen substituents are only chlorine and fluorine, and having dissolved therein an inert gas.

3,804,760

WELL COMPLETION AND WORKOVER FLUID

Henry C. H. Darley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of abandoned application Ser. No. 884,819, Dec. 2, 1969. This application Aug. 27, 1971, Ser. No. 175,690

Int. Cl. B01j *13/00;* **E21b** *43/00*

U.S. Cl. 252—8.55 R **3 Claims**

A particle-stabilized water-in-oil emulsion that contains sufficient fine, acid-soluble, oil-wet particles to stabilize the emulsion while the particles are present and insufficient surfactant to stabilize the emulsion after those particles have been dissolved.

3,804,761

FORGING LUBRICANT

Wendell C. Milz, New Kensington, and William G. Johnston, Pittsburgh, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Filed Sept. 12, 1972, Ser. No. 288,278

Int. Cl. C10m *1/10, 3/02, 5/02*

U.S. Cl. 252—30 **1 Claim**

Addition of calcium molybdate or magnesium metaborate to lead-containing forging lubricants.

3,804,762

ANTIOXIDANTS

Graham James Jervis, Abingdon, and Robert Robson, Wantage, England, assignors to Esso Research and Engineering Company

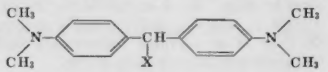
No Drawing. Filed Sept. 14, 1972, Ser. No. 289,154

Claims priority, application Great Britain, Oct. 6, 1971, 46,458/71

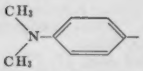
Int. Cl. B01j *1/16;* **C10m** *1/34*

U.S. Cl. 252—50 **9 Claims**

As antioxidant mixture suitable for an aviation turbine oil (e.g. an ester of pentaerythritol) comprises (a) an alkylated N-phenyl naphthylamine having at least one alkyl substituent each containing from 3 to 14 carbon atoms, e.g. N-(tert-octyl phenyl)-β-naphthylamine and (b) an amino compound of the formula



where X is hydrogen, hydrocarbyl containing up to 20 carbon atoms, or the group



e.g. N,N′ tetramethyl diamino diphenyl methane, the mole ratio of (a) to (b) being at least 1:1. This antioxidant has good antioxidant potency together with low corrosive tendencies.

3,804,763

DISPERSANT COMPOSITIONS

Norman Anthony Meinhardt, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed July 1, 1971, Ser. No. 150,017

Int. Cl. C10l *1/22;* **C10m** *1/20, 1/32*

U.S. Cl. 252—51.5 A **15 Claims**

This invention is directed to an oil soluble dispersant and to a process for preparing said dispersant which comprises contacting and reacting at least one carboxylic-acylating agent having at least about 30 aliphatic carbon atoms per molecule with effective amounts of at least one hydroxy compound, at least one polyoxyalkylene polyamine having an average molecular weight of at least about 200 and from zero to about 4.0 equivalents of at least one alkylene amine per equivalent of said carboxylic-acylating agent. The dispersant of this invention is particularly useful as an additive for a variety of oleaginous materials including, for example, fuels, lubricating oils, hydraulic fluids and the like.

3,804,764

ELECTROSTATOGRAPHIC PRESSURE SENSITIVE POLYMERIC TONER

Stephen Strella, Pittsford, and Meurig W. Williams, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,441

Int. Cl. G03g *9/00*

U.S. Cl. 252—62.1 **16 Claims**

A pressure fixable toner comprised of a weakly crosslinked amorphous polymer the crosslink bonds of which

are disrupted and/or broken by the application of pressure whereby the polymer is sufficiently soft to be fixed by pressure.

3,804,765

ADJUSTING FERROELECTRIC CERAMIC CHARACTERISTICS DURING FORMATION THEREOF

Dean A. Buckner, Alameda, and Paul D. Wilcox, Albuquerque, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed June 13, 1972, Ser. No. 262,414
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 **2 Claims**

A process for forming lead zirconate titanate-type ferroelectric ceramics having desired characteristics by providing a mixture of the desired oxide powders to form the ferroelectric ceramic; calcining said mixture to convert the same to a ferroelectric phase; separating a portion of the resulting calcined material and thereafter milling, blending and compressing said portion to a slug, sintering the slug to a dense mass and measuring the characteristics of the sintered slug; then mixing an additive determined by said measured characteristics with said remaining calcined material to modify the remaining calcined material characteristics to a predetermined level; and thereafter milling, blending and compressing the additive containing calcined material to another slug and sintering said another slug to a dense mass.

3,804,766

LOW BIREFRINGENT ORTHOFERRITES

Richmond Bennett Clover, Jr., Hightstown, N.J., assignor to RCA Corporation

Filed Dec. 13, 1971, Ser. No. 207,274
Int. Cl. C04b *35/40*
U.S. Cl. 252—62.57 **4 Claims**

Orthoferrites having low optical birefringence have the molar formula $M_xE_{1-x}FeO_3$, wherein M is a lanthanide of the type having a positive contribution to the optical birefringence of the orthoferrite and E is a lanthanide having a negative contribution to the optical birefringence of the orthoferrite, the proportion of E to M being such that said crystal has a low net non-magnetic optical birefringence. Examples of such orthoferrites include

$$Sm_xPr_{1-x}FeO_3$$

$Sm_xLa_{1-x}FeO_3$ and $Nd_xPr_{1-x}FeO_3$, the value of x being approximately 0.4, 0.7 and 0.8, respectively, for a near zero birefringence at a wavelength of 0.633 micron.

3,804,767

METHOD OF MANUFACTURING CERAMIC MAGNETS CONTAINING STRONTIUM OR BARIUM FERRITE

Terence Leslie Tombs, Warwick, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 88,469, Nov. 10, 1970. This application Oct. 26, 1972, Ser. No. 301,251
Claims priority, application Great Britain, Nov. 11, 1969, 55,085/69
Int. Cl. C04b *35/00*
U.S. Cl. 252—62.63 **18 Claims**

A method of manufacturing a ceramic magnet containing strontium ferrite includes the step of first producing a particulate mixture of celestite and ferric oxide in such proportions that the composition of the strontium ferrite in the resultant magnet lies in the range $SrO5.1Fe_2O_2$ to $SrO6.0Fe_2O_3$. The particulate mixture is then heated in the presence of a reaction promoting compound at a temperature sufficient to cause the celestite and the ferric oxide to react together to directly form a product containing strontium ferrite, the reaction promoting compound being chosen so that its cation forms a sulphate which can be removed from the product by leaching. Subsequently the sulphate is removed from the product by leaching.

A magnet containing barium ferrite can also be manufactured by the present method in which case a particulate mixture of barium sulphate and ferric axide is produced and heated in the presence of the particulate reaction promoting compound.

3,804,768

NICKEL ETCH COMPOSITION

Frederick Walter Eppensteiner, Southfield, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

No Drawing. Original application Mar. 26, 1969, Ser. No. 810,824, now Patent No. 3,669,776. Divided and this application Dec. 2, 1970, Ser. No. 94,634
Int. Cl. C09k *3/00*
U.S. Cl. 252—79.4 **11 Claims**

A method is provided for imparting decorative, light diffusing and/or non-reflective etching to nickel surfaces which includes immersing objects having clean nickel surfaces in a solution having a pH within the range of 9–12 and containing a nickel oxidant, ethylenediamine and a source of sulfate ion, for a period of time sufficient to form crystals on the nickel surfaces, withdrawing the objects with the crystal formation thereon from the solution, removing any remaining solution from the nickel surfaces, and immersing the objects in a crystal solvent to dissolve the crystals, and removing the objects with the etched nickel surfaces thereon, the pattern of the etching being substantially the same as the original crystal formation thereon. Further, solutions are provided for imparting the decorative, light diffusing and/or non-reflective etch and objects having disposed thereon decorative, light diffusing and/or non-reflective etched nickel surfaces.

3,804,769

SOLVENT COMPOSITIONS

Donald Lomas, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,545
Claims priority, application Great Britain, Mar. 3, 1971, 5,920/71
Int. Cl. C11d *7/50*
U.S. Cl. 252—171 **3 Claims**

A solvent composition suitable for use in the removal of flux from circuit boards which comprises an azeotropic-forming mixture of trichloro-pentafluoropropane with an alkanol containing 1 to 4 carbon atoms in the molecule.

3,804,770

EDTA-ORGANOPHOSPHONATE COMPOSITION FOR CONTROLLING SCALE

Walter F. Lorenc, Harvey, and Roland A. Berner, Tinley Park, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Oct. 20, 1972, Ser. No. 299,520
Int. Cl. C02b *5/06*
U.S. Cl. 252—180 **12 Claims**

Compositions and methods used to inhibit scale formation and/or the formation of solid scale forming salts comprises adding to water small amounts of a synergistic combination of ethylene diamine tetraacetic acid and a specific organophosphonate.

3,804,771

THERMOGENIC SYSTEMS

Elly T. Margolis, Los Angeles, Calif., assignor to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,861
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 **12 Claims**

A system based on exothermic chemical reactions for heating consumer products as dispensed from pressurized

containers. The system includes chemical compositions comprising certain sulfur-containing compounds, and combinations of certain sulfur-and-nitrogen containing compounds with formaldehyde, which react with appropriate oxidizing agents to form, among other reaction products, carbon dioxide or carbonate ion, and sulfate ion.

3,804,772

PREPARATION OF SOLUTIONS OF MIXED URANIUM AND PLUTONIUM NITRATES

Edward Sydney Lane, Didcot, and Norman Jackson, Abingdon, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,458
Claims priority, application Great Britain, Jan. 18, 1971, 2,436/71
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R **1 Claim**

A mixed uranium and plutonium solution wherein the nitrate concentration is slightly greater than, equal to or less than that required for U(VI) and Pu(IV) valencies is prepared by mixing a plutonium(IV) nitrate solution containing nitric acid with a diuranate, uranium trioxide or a solution of uranium trioxide in uranyl nitrate. It is thus possible to prepare mixed solutions where the mole ratio of plutonium to uranium and the mole ratio of nitrate to total metal can be varied according to the nitrate concentration desirable for subsequent operations.

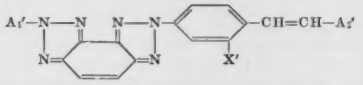
3,804,773

TRIAZOLE DERIVATIVES

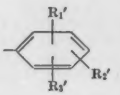
Adolf Emil Siegrist, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,421
Claims priority, application Switzerland, Oct. 1, 1970, 14,509/70
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.2 W **8 Claims**

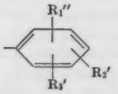
The invention concerns a process for the manufacture of triazole derivatives of the formula



wherein A_1' denotes diphenylyl-(4), naphthyl or a radical



A_2' denotes diphenylyl-(4), naphthyl, pyridyl-(3), thienyl-(2), m-tolyl or a radical



X' denotes hydrogen, chlorine, nitrile or methoxy and R_1'', R_2' and R_3' are identical or different and represent hydrogen, alkyl with at least 2 carbon atoms, alkoxy or chlorine and R_1'' can also denote phenoxy, phenylmercaptan or alkylmercapto and R_1'' together with R_2' can denote a methylenedioxy group, by means of the anile-synthesis. These new compounds are useful fluorescent whitening agents.

3,804,774

INKS WHICH FLUORESCE WHEN EXPOSED TO NEAR OR MIDDLE ULTRAVIOLET RADIATION

James F. Betts, Euclid, Richard A. Fotland, Warrensville Heights, and Victor P. Petro, Brecksville, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,704
Int. Cl. C09k *1/00;* **F21k** *2/00*
U.S. Cl. 252—301.2 R **7 Claims**

Blue inks which, when dry, fluoresce with very short luminescent lifetimes when exposed to near U.V. or middle U.V. comprise suitable polymers in which certain anthracenes are dissolved or dispersed.

3,804,775

METHOD OF PREPARING MICROCAPSULES

Tomoharu Shiozaki and Jujiro Kono, Osaka, Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,568
Claims priority, application Japan, Dec. 25, 1970, 45/127,017
Int. Cl. B44d *1/02;* **B01j** *13/02*
U.S. Cl. 252—316 **16 Claims**

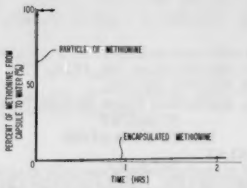
A microencapsulation process is disclosed using a mixture of solutions of polymer materials useful over a wide pH range which includes bringing core particles, either of a water-immisible liquid or particulate solid, into contact with an aqueous solution of gelatin and polyvinyl alcohol, or their water soluble derivatives, causing the gelatin component to undergo phase separation forming an encapsulating shell composed primarily of the gelatin component is formed around the individual core particles, then lowering the temperature of the mixture to cause the gelatin component that surrounds the individual core particles to gel. Substantially uniform nonagglomerated microcapsules so formed are useful as surface coatings on a substrate material, such as a pressure sensitive recording paper.

3,804,776

METHOD OF PRODUCING OIL AND FAT ENCAPSULATED AMINO ACIDS

Kenichiro Yazawa, Fuminori Arai, Masao Kitajima, and Asaji Kondo, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1971, Ser. No. 207,911
Claims priority, application Japan, Dec. 14, 1970, 45/111,581
Int. Cl. B01j *13/02;* **B44d** *1/02*
U.S. Cl. 252—316 **5 Claims**



Oil and fat encapsulated amino acids or polypeptides are prepared by dispersing such compound in a molten mixture of oils and fats, some of which have a melting point greater than 40° C. and some of which have a melting point less than 40° C., the mixture thereafter being poured into water which is at the temperature of from 20–40° C.

3,804,777

METHOD FOR ACID REACTIVATING LEAD POISONED HYDROGENATION CATALYSTS

Roberto Canavesi, Bollate, and Giancarlo Aglietti and Benedetto Calcagno, Milan, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed July 22, 1971, Ser. No. 165,388
Claims priority, application Italy, July 23, 1970, 27,785/70
Int. Cl. B01j *11/18*
U.S. Cl. 252—413 2 Claims

Hydrogenation catalysts poisoned by lead, particularly palladium alumina catalysts, are regenerated with dilute nitric or orthophosphoric acid at ambient or slightly raised temperatures.

3,804,778

FLUORINATION CATALYST AND PROCESS

Ramanadin, Salindres, France, assignor to Societe Rhone-Progil, Courbevoie, France

No Drawing. Filed May 1, 1972, Ser. No. 249,672
Claims priority, application France, May 6, 1971, 16,333
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 13 Claims

A process for the preparation of a fluorination catalyst wherein chromium and nickel salts of organic acids are treated at an elevated temperature under vacuum or in an inert atmosphere to produce non-stoichiometric inorganic compounds in which the chromium has a valence between 2 and 3 and the nickel has a valence between 0 and 2, and the mixture of the non-stoichiometric compounds thereby obtained is shaped and is then contacted with anhydrous hydrogen fluoride at an elevated temperature. The catalysts of the present invention are useful in the preparation of perfluoro compounds by reaction of perhalogenated compounds with hydrogen fluoride.

3,804,779

CARBON SUPPORTED PALLADIUM CATALYST

Ronald A. Kent, Ridgewood, and Robert D. Evans, Hackensack, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,057
Int. Cl. B01j *11/16*
U.S. Cl. 252—447 13 Claims

Palladium on carbon hydrogenation catalysts of low sulfur content exhibiting good stability toward poisons and having high hydrogenation activity and high specificity are prepared by impregnating carbon with a slightly acidic suspension of a palladium compound, reducing and treating the palladium on carbon catalyst under basic conditions.

3,804,780

CATALYST OF ZINC-RARE EARTH EXCHANGED ZEOLITE

Robert C. Wilson, Jr., Woodbury, N.J., assignor to Mobil Oil Corporation

No Drawing. Mar. 15, 1972, Ser. No. 235,040
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z 4 Claims

A catalyst stabilized with respect to heat and steam which comprises a crystalline aluminosilicate zeolite having an ordered internal structure and uniform pores, said zeolite having been exchanged with an amount of rare earth cations such that the amount of rare earth, calculated as rare earth oxide, is between 6 and 13 percent by weight, based on the weight of the zeolite, said zeolite also containing zinc present in an amount less than 2.5 weight percent based on the weight of the zeolite; hydrocarbon conversion, especially catalytic cracking and hydrocracking with such a zeolite and a method of preparing the so exchanged zeolite.

3,804,781

EXTRUDED ALUMINA CATALYST SUPPORTS

Joseph Dennis Colgan, Fort Worth, Tex., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 28, 1972, Ser. No. 276,199
Int. Cl. B01j *11/06*
U.S. Cl. 252—463 9 Claims

A process for obtaining alumina extrudates with improved porosity is disclosed which comprises adding a small amount of a surface active agent to hydrous alumina immediately before or after partial drying thereof and before extrudate formation from the partially dried alumina.

3,804,782

FLEXIBLE CELLULAR POLYURETHANE FOAM COMPOSITIONS HAVING INCREASED FLAME RETARDANCE

John G. Demou, Lincoln Park, Louis C. Pizzini, Trenton, and John T. Patton, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed June 19, 1972, Ser. No. 264,157
Int. Cl. C08g *22/46;* C08j *1/22*
U.S. Cl. 260—2.5 AW 9 Claims

Flexible cellular foam compositions are prepared by reacting an organic compound having at least two active hydrogen atoms with an organic polyisocyanate employing an isocyanate index of 115–225 in the presence of a catalytically sufficient amount of a 1,3,5-tris(N,N-dialkylaminoalkyl) - 5-hexahydratriazine or the alkylene oxide and water adducts thereof. The resulting foam compositions exhibit excellent flame retardant properties.

3,804,783

SELF-EXTINGUISHING POLYMER COMPOSITIONS CONTAINING BROMINATED CINNAMIC ACID ESTERS

Hilda Howell and Walter M. Kutz, Pittsburgh, Pa., assignors to Koppers Company, Inc.

No Drawing. Original application July 21, 1971, Ser. No. 164,824, now Patent No. 3,766,249. Divided and this application Dec. 4, 1972, Ser. No. 312,108
Int. Cl. C07c *69/34, 69/76;* C08f *45/58*
U.S. Cl. 260—2.5 FP 15 Claims

Solid organic polymers normally susceptible to burning are rendered self-extinguishing by incorporating therein an ester of α,β-dibromodihydrocinnamic acid or α,β-dibromodihydrocinnamyl alcohol; for example, 2,4-diisopropylphenyl, α,β - dibromodihydrocinnamate. The self - extinguishing agents useful in the invention are unexpectedly stable to the hydrolytic conditions of impregnation, yet are highly reactive as self-extinguishing agents.

3,804,784

NITROCELLULOSE/SYNTHETIC POLYMER ADHESIVES

Irving P. Esbitt, Wycliffe, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,335
Int. Cl. C08b *21/12, 21/14*
U.S. Cl. 260—14 8 Claims

There are provided blends of film-forming polymers and solutions thereof in solvents providing a desired evaporation rate for use of said solutions in nail-magazine manufacture. Nails bearing the film-forming polymers are also provided.

3,804,785

POLYVINYL ALCOHOL COMPOSITIONS CONTAINING AMYLOSE AND/OR AMYLITOL OF LOW MOLECULAR WEIGHT

Hiromi Hijiya and Mamoru Hirao, Okayama, Japan, assignors to Ken Hayashibara, Okayama, Japan

No Drawing. Filed Feb. 8, 1972, Ser. No. 224,583
Claims priority, application Japan, Feb. 15, 1971, 46/6,133
Int. Cl. C08g 9/06
U.S. Cl. 260—17.4 ST 8 Claims

Aqueous solutions of polyvinyl alcohol containing amylose and/or amylitol of low molecular weight (average or mean degree of polymerization 20–30) in an amount of not substantially more than 50% of the PVA can be dried to films soluble in cold water that are more transparent and less hygroscopic than films produced from PVA alone or modified with other starch derivatives, and are virtually impermeable to oxygen. The solutions may also be employed for sizing paper and textile fibers, for producing fibers by dry spinning, and the like.

3,804,786

WATER-DISPERSIBLE CATIONIC POLYURETHANE RESINS

Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Des Plaines, Ill.

No Drawing. Filed July 14, 1971, Ser. No. 162,659
Int. Cl. C08g 22/04
U.S. Cl. 260—18 PT 12 Claims

Water-dispersible cationic resins, and especially polyurethane resins, are provided by reacting a resinous polyepoxide with a stoichiometric deficiency of polyisocyanate to provide an hydroxy-functional polyurethane in which tertiary amine functionality is generated by reaction with a monosecondary amine to provide dispersibility in water with the aid of an acid. Some of the epoxy functionality is consumed by esterification with a monocarboxylic acid to provide internal plasticization and enhance film formation. This is especially important when the resins are electrodeposited at the cathode. The monocarboxylic acid may be unsaturated to provide a basis for cure which is independent of the hydroxy functionality.

3,804,787

PAINT COMPOSITIONS WHICH ARE EMULSIFIABLE IN AQUEOUS DETERGENT

Peter Francis Nicks, Maidenhead, Gladys Mary Jones, Wokingham, and Alan Stuart Baker, Slough, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 29, 1972, Ser. No. 267,656
Claims priority, application Great Britain, July 6, 1971, 31,661/71
Int. Cl. C09d 3/64, 3/72, 5/06
U.S. Cl. 260—22 R 28 Claims

Paints based on water-immiscible liquid, which can be removed from an applicator by emulsification in aqueous synthetic detergent, are prepared by a process including a step in which the pigment is treated with an auxiliary resin which will co-emulsify with the pigment in the aqueous detergent and is adsorbed on the pigment in preference to the base resin of the paint.

3,804,788

PAPER SIZING AGENT

Koji Funaoka, Saitama, and Tatsuro Miwa, Tokyo, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed July 26, 1972, Ser. No. 275,406
Claims priority, application Japan, July 27, 1971, 46/55,675; June 16, 1972, 47/59,395
Int. Cl. C09j 3/26
U.S. Cl. 260—27 R 33 Claims

A sizing agent for use in paper-making is prepared by polymerizing a C_4 and/or a C_5 fraction containing diolefins or a mixture of a C_4 and/or a C_5 fraction containing diolefins with dicyclopentadiene to obtain a petroleum resin, reacting 100 parts by weight of the resulting petroleum resin having unsaturated bonds and a softening point of not higher than 40° C. with not less than 8 parts by weight of an α,β-unsaturated dibasic acid to obtain an addition product, further reacting the resulting addition product with urea or ammonia to form a partially amidated petroleum resin, adding at least one of rosin, tall oil and modified products thereof, and then saponifying the mixture with an alkaline solution.

3,804,789

EPICHLOROHYDRIN-AMMONIA RESIN

Thomas A. Chamberlin, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 29, 1973, Ser. No. 327,392
Int. Cl. C08g 33/06
U.S. Cl. 260—29.2 EP 4 Claims

Epichlorohydrin-ammonia resins have improved properties as paper additives when reacted with 0.02–0.8 equivalent of thiourea based on the chlorohydrin moieties present. Paper made from pulp treated with the improved resins has significantly higher wet strength.

3,804,790

EXTERNALLY CATALYZED THERMOSETTING COATING COMPOSITIONS COMPRISING ALKYLOLATED AMIDE INTERPOLYMERS OF HIGH ACID CONTENT IN COMBINATION WITH LOW MOLECULAR WEIGHT POLYHYDRIC ALCOHOLS

Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Des Plaines, Ill.

No Drawing. Filed Jan. 4, 1972, Ser. No. 215,413
Int. Cl. C08f 45/34
U.S. Cl. 260—29.6 TA 13 Claims

A thermosetting coating composition adapted to deposit coatings which cure on baking more completely, more rapidly, and at lower temperature to provide a pencil hardness of 1H or harder, and which possess improved flexibility, solvent resistance and impact resistance, comprising non-gelled interpolymer of monoethylenically unsaturated monomers comprising from 3–25% by weight of alkyloated carboxylic acid amide, monoethylenic carboxylic acid in an amount to provide in the interpolymer a ratio of carboxyl to N-alkylol functionality of from .3:1 to 1.2:1, and at least 30% by weight from the group of styrene, vinyl toluene and methyl methacrylate, in admixture with a polyhydric alcohol having a molecular weight of up to about 6000, in an amount to provide a ratio of hydroxy to N-alkoxy functionality of from .02:1 to .6:1, and dissolved inorganic metal catalytic salt in an effective amount up to about 4%, based on the weight of the interpolymer, preferably a chloride, perchlorate, bromide or nitrate of lithium, magnesium, calcium, barium, zinc or manganese.

3,804,791

POLYAMIDE SPINNING DOPE

Paul Winthrop Morgan, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,289
Int. Cl. C08g 51/44, 51/46
U.S. Cl. 260—30.8 R 4 Claims

An anisotropic dope comprising a polyamide in concentrated sulfur acid within the concentration range of about 96–104% H_2SO_4, said polyamide consisting essentially of recurring units of the formula:

$$—HN—R_1—NHCO—R_2—CO—$$

wherein R_1 is divalent organic radical selected from the group of 1,4 - phenylene; trans-1,4-cyclohexylene; 4,4′-azodiphenylene; 4,4′-azoxydiphenylene; and 4,4′-carbonamidodiphenylene; R_2 is a divalent organic radical selected from the group of 1,4 - phenylene; trans - 1,4-

cyclohexylene; 2,5 - pyridylene; 4,4' - azodiphenylene; being a radical selected from the group of 4,4'-azodiphenylene and 4,4'-azoxydiphenylene.

3,804,792
FIRE RETARDANT PLASTICIZERS
R. Garth Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed July 27, 1972, Ser. No. 275,467
Int. Cl. C08f *45/36*
U.S. Cl. 260—31.6 **7 Claims**

Compounds having the general formula

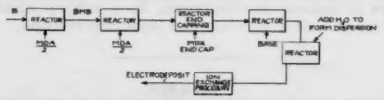
$$ROCH_2C(CH_2X)_2CH_2OR$$

wherein

R is the acyl radical of a carbonic or a saturated aliphatic monocarboxylic acid having from 2 to 6 carbon atoms free of substituents other than chlorine or bromine and each X is independently Cl or Br

are excellent fire retarding plasticizers for vinyl chloride polymers, either alone or in combination with nonhalogenated plasticizers.

3,804,793
MAKING POLYAMIDE-ACID AQUEOUS DISPERSIONS FOR ELECTROCOATING
James M. McQuade, Fort Wayne, Ind., assignor to General Electric Company
Filed Oct. 23, 1970, Ser. No. 83,446
Int. Cl. C08g *51/24;* **C09d** *5/02;* **C23b** *13/00*
U.S. Cl. 260—29.2 N **9 Claims**



Resin materials can be electrodeposited from aqueous systems and thicker film buildups achieved when the resin is in the form of a dispersion. The dispersion is prepared by first forming polymeric materials in an anhydrous solvent system, the reactants being substantially acid free. A base material such as ammonia or its equivalent is added to react with a portion of the carboxylic units on the resin chain. Sufficient numbers of these carboxylic units are reacted so that upon addition of water the resin will be precipitated as a relatively fine dispersion. An ion exchange resin is added to decrease the concentration of the resin which is in continuous phase since one of the principal discoveries of the present invention is that thicker electrodepositions can be obtained by reducing the amount of resin in the continuous phase.

The ion exchange resin reacts with the cation which has rendered the resin water soluble and by decreasing the resin water solubility the dissolved phase resin becomes part of the dispersion which is electrodeposited.

3,804,794
AQUEOUS ZINC OXIDE-DICARBOXYLIC ACID POLYMER DENTAL CEMENT
Werner Schmitt and Robert Purrmann, Starnberg, and Peter Jochum and Wolf-Dieter Zahler, Hechendorf, Germany, assignors to Espe Fabrik Pharmazeutischer Praparate GmbH, Seefeld, Upper Bavaria, Germany
No Drawing. Filed Jan. 3, 1972, Ser. No. 215,139
Int. Cl. A61k *5/00;* **C08f** *29/34*
U.S. Cl. 260—29.6 M **6 Claims**

Dental cements contain zinc oxide and an aqueous solution of a polymer of an unsaturated alpha, beta-dicarboxylic acid.

3,804,795
HIGH MOLECULAR WEIGHT RESINS HAVING LOW SOLUTION VISCOSITIES
William O. Perry, Marius W. Sorenson, and Thomas J. Hairston, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Nov. 6, 1972, Ser. No. 304,043
Int. Cl. C08g *33/10, 51/26*
U.S. Cl. 260—30.4 EP **8 Claims**

High molecular weight epoxy and phenoxy resins are disclosed which possess pendant acetal or ketal groups. Such resins have lower solution viscosities.

3,804,796
METHOD OF INCORPORATING VOLATILE ORGANIC SUBSTANCES INTO THERMOPLASTIC MATERIALS AND ARTICLES MADE FROM THE RESULTING COMPOSITIONS
Pierre Alexandre, Paris France, assignor to L'Oreal, Paris, France
No Drawing. Filed June 7, 1972, Ser. No. 260,510
Claims priority, application Luxembourg, June 14, 1971, 63,328
Int. Cl. C08f *45/04*
U.S. Cl. 260—42.43 **7 Claims**

Small glass microballs, finely divided diatomite, and an odoriferous organic substance are mixed into a powdered thermoplastic material which is then molded into an article at a temperature 20°–50° C. lower than that ordinarily required to mold articles of said thermoplastic materials.

3,804,797
COATING COMPOSITIONS COMPRISING CYCLIC SULFONIUM ZWITTERIONS WITH CARBOXY CONTAINING POLYMERS
William E. Broxterman, Donald L. Schmidt, and Syamalarao Evani, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 13 ,1972, Ser. No. 288,700
Int. Cl. C07d *3/74, 11/02*
U.S. Cl. 260—29.6 Z **11 Claims**

Desirable binder or coating compositions comprise combinations of cyclic sulfonium zwitterions and water-soluble or alcohol-soluble polymers containing a plurality of carboxylic acid groups. Printing inks incorporate water- or alcohol-soluble dyes or water-dispersible pigments with such binder compositions. The compositions cure readily to provide water-resistant, adherent products when dried.

3,804,798
CURE OF ETHYLENE-PROPYLENE-NONCONJUGATED DIENE THERPOLYMER ELASTOMER
Stephen E. Cantor, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Feb. 11, 1972, Ser. No. 225,641
Int. Cl. C08d *9/00*
U.S. Cl. 260—42.33 **27 Claims**

EPDM compositions containing a dioxime (e.g., p-quinone dioxime) and a N-haloamide (e.g., 1,3-dichloro-5-methyl-5-isobutyl hydantoin) are useful as adhesives, sealants or caulks which cure at ambient temperature. When the composition contains silica filler, adhesion is enhanced. Cured sheets of EPDM can be cemented together with the adhesive. A solution of N-haloamide, applied to an EPDM sheet containing a dioxime, causes the sheet to cure.

3,804,799
METAL-AMINE COMPLEX ACCELERATOR FOR POLYESTER RESIN CURING
Melville W. Uffner, Glen Mills, Pa., assignor to Air Products and Chemicals, Inc., Wayne, Pa.
No Drawing. Filed Sept. 1, 1972, Ser. No. 285,907
Int. Cl. C08g *17/16*
U.S. Cl. 260—40 R **12 Claims**

Salts of cobalt and/or other metals such as zinc and nickel form complexes with triethylene diamine com-

pounds which are useful in accelerating free-radical initiated curing and cross linking of unsaturated polyester resins.

3,804,800

FLAME RESISTANT POLYMERS CONTAINING AMIDE COMPLEXES OF METAL SALTS

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application July 23, 1971, Ser. No. 165,717, now Patent No. 3,705,128, dated Dec. 5, 1973. Divided and this application Oct. 13, 1972, Ser. No. 297,039

Int. Cl. C08f *45/62;* **C08g** *51/62*

U.S. Cl. 260—45.75 R **4 Claims**

Flame resistant polymers, such as halogenated polyesters and polyvinyl chloride containing amide complexes of certain metal salts such as zinc chloride-N-methylpyrrolidone, and articles such as molded bodies, films, etc., of such flame-resistant polymers.

3,804,801

FLUOROHYDROCARBON ELASTOMERS

John Day and David Kenneth Thomas, Farnham, Surrey, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,962

Claims priority, application Great Britain, Nov. 27, 1970, 56,400/70

Int. Cl. C08f *37/02, 37/16*

U.S. Cl. 260—42.27 **11 Claims**

A fluorohydrocarbon elastomer composition having improved low temperature properties is provided by including in the composition as plasticizer a fluorosilicone polymer which has been modified by treatment with an amine compound of formula $H_2N(R \cdot NH)_nH$, where R is a divalent lower alkane chain containing not more than eight carbon atoms, and n is an integer from one to five, an an organic peroxide free radical source, to have a specific viscosity in the range 0.03 to 0.06. Preferably the amine compound is triethylene tetramine and the organic peroxide free radical source is 2,5-dimethyl-2,5-ditertiarybutylperoxyhexane. In a typical example the Clash and Berg temperature of a typical vinylidene fluoride/hexafluoropropylene copolymer is reduced from −17° C. to −32° C.

3,804,802

THERMOPLASTIC COMPOSITES WITH LOW ALKALI GLASS FILLERS

Horacio Enrique Bergna, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 119,843, Mar. 1, 1971. This application Jan. 27, 1972, Ser. No. 221,411

Int. Cl. C08f *45/10;* **C08g** *51/10*

U.S. Cl. 260—42.16 **10 Claims**

Adhesion between certain thermoplastic resins and low alkali glass filler materials such as borosilicate or aluminosilicate glass is enhanced by treatment of the filler material, prior to forming a composite with the resin, with a solution of a chromium (III) compound belonging to the following group: chromium nitrate, olated chrominum nitrate, complexes of chromium nitrate and olated chromium nitrate with fumaric acid or substituted fumaric acids, and basic chromium chloride in the presence of nitrate ions. Composites made from thermoplastic resins and such treated filler materials have a very high flexural strength and are resistant to degradation by hot water.

3,804,803

POLYALKENAMERS AND PROCESS FOR THE PREPARATION THEREOF

Roland Streck and Heinrich Weber, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed June 4, 1971, Ser. No. 150,193

Claims priority, application Germany, June 6, 1970, P 20 27 905.4

Int. Cl. C08d *3/04;* **C08f** *1/28, 5/00*

U.S. Cl. 260—47 UA **23 Claims**

Polyalkenamers are produced by a ring-opening polymerization of cyclic olefins employing a catalyst containing a metal of Subgroups 5 to 7 of the Periodic Table and conducting the polymerization in the presence of an unsaturated ether wherein at least one of the carbon atoms bearing the double bond bears at least one hydrogen atom.

3,804,804

PREPARATION OF HETEROCYCLIC POLYMERS FROM HETEROAROMATIC TETRAMINES

Arthur H. Gerber, University Heights, and Stanley D. Koch, Beachwood, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated

No Drawing. Continuation-in-part of application Ser. No. 92,154, Nov. 23, 1970, now Patent No. 3,740,410. This application June 9, 1971, Ser. No. 151,601

Int. Cl. C08g *20/32, 33/02*

U.S. Cl. 260—47 CP **25 Claims**

A process for the preparation of uncyclized and cyclized heterocyclic polymers which comprises the reaction of heteroaromatic tetramines or their acid salts with a polybasic acid, acid derivatives, or a bis(α-dicarbonyl) compound. Said heteroaromatic tetramines are derived from a diamino heteroaromatic by a process which involves at least a nitration and reduction reaction.

3,804,805

COPOLYESTER PREPARED FROM POLYETHYLENE TEREPHTHALATE AND AN ACYLOXY BENZOIC ACID

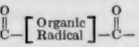
Herbert F. Kuhfuss and Winston J. Jackson, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

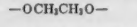
Filed Dec. 1, 1972, Ser. No. 311,208

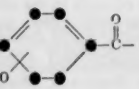
Int. Cl. C08g *17/02, 17/08*

U.S. Cl. 260—47 C **11 Claims**

Disclosed is a copolyester having no substantial amount of aliphatic to aromatic oxygen linkages, the copolyester being comprised of the following divalent radicals:

(A) 

(B) 

(C) 

wherein the range of radical (C) is from 20 to 80 mole percent, based on the total moles of radical (A) and radical (C) combined. The copolyesters of this invention are prepared by a process comprised of two steps. The first step comprises forming a fragmented polyester by acidolysis of a starting polyester with an acyloxy benzoic acid. The second step comprises increasing the inherent viscosity of the fragmented polyester to form the copolyester of the invention. The starting polyester is formed from a dicarboxylic acid and ethylene glycol and contains a repeating unit composed of radical (A) attached to radical (B). When the acyloxy benzoic acid and starting polyester are contacted, acidolysis occurs and a fragmented

polyester is formed. The inherent viscosity of the fragmented polyester is then increased to form the copolyester of the invention comprised of radicals (A), (B) and (C). Radical (A) of the copolyester is contributed from the dicarboxylic acid portion of the starting polyester, radical (B) of the copolyester is contributed from the ethylene glycol portion of the polyester and the acyloxy benzoic acid contributes radical (C) to the copolyester. Radical (C) will be recognized as the radical remaining after removal of the acyl and hydroxy groups from the acyloxy benzoic acid. The copolyesters of this invention exhibit unobvious mechanical properties.

3,804,806

ALKOXY ANILINES AS CURING AGENTS FOR EPOXY RESINS

John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Aug. 9, 1972, Ser. No. 279,118
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **21 Claims**

This invention relates to curable epoxy compositions and more specifically to polyepoxides containing effective amounts of alkylene-bis(alkoxyanilines) as curing agents.

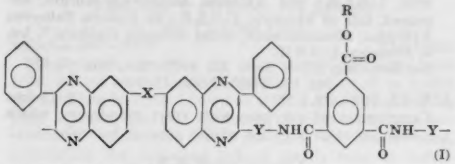
3,804,807

CROSSLINKED POLYAMIDE-QUINOXALINES

James V. Duffy, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy

No Drawing. Filed July 11, 1973, Ser. No. 378,295
Int. Cl. C08g *15/00*
U.S. Cl. 260—65 **8 Claims**

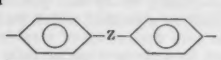
Film or fiber forming phenylated polyamide-quinoxalines consisting essentially of units of the formula



(I)

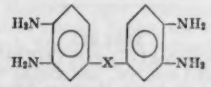
where X is a direct bond,

O, S, SO or SO_2 and Y is o-phenylene, m-phenylene, p-phenylene or



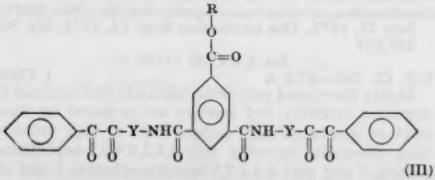
wherein X is a direct bond,

O, S, SO or SO_2 and R is H, phenyl or lower alkyl are prepared by contacting a tetramine of the formula



(II)

with an amide of the formula



(III)

These polymers find use as films or coatings and can also be made into fibers.

3,804,808

METHOD FOR POLYMERIZING FORMALDEHYDE

Takami Ishii, Yoshihiro Inuizawa, and Hiromi Kumahara, Ichihara, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

No Drawing. Filed May 25, 1972, Ser. No. 256,742
Claims priority, application Japan, Oct. 19, 1971, 46/82,124
Int. Cl. C08g *1/02*
U.S. Cl. 260—67 FP **6 Claims**

Improved method for polymerizing formaldehyde in the presence of a metal chelate compound as catalyst is described; formaldehyde is polymerized in a solution of bis(3-phenylacetylacetone)copper dissolved in an inert organic solvent at the concentration of 1×10^{-9} to 5×10^{-7} mole per liter of the solvent until the concentration of polymer in the resulting slurry reaches the range of 30 to 150 g./l.

3,804,809

POLYURETHANE COMPOSITIONS HAVING IMPROVED HYDROLYTIC STABILITY

Armand E. Brachman, Allentown, Pa., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,581
Int. Cl. C08g *22/10, 53/20*
U.S. Cl. 260—75 NK **14 Claims**

Polyurethanes having improved hydrolytic stability being especially useful where they are used under adverse conditions of humidity are prepared by reacting a mixture of an imine pre-treated hydroxyl terminated polyester soft segment with a hydroxyl poly(alkylene oxide), an aliphatic glycol, and a poly isocyanate and extender.

3,804,810

CROSS-LINKED POLYURETHANES BASED ON AROMATIC/ALIPHATIC COPOLYESTERS

Michael Fryd, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 102,919, Dec. 30, 1970. This application June 1, 1971, Ser. No. 149,009
The portion of the term of the patent subsequent to Oct. 2, 1990, has been disclaimed
Int. Cl. C08g *22/10, 51/26*
U.S. Cl. 260—75 NK **29 Claims**

A cross-linking polyester-urethane produced by

(A) admixing at least one linear copolyester, such copolyester
  (1) produced by the reaction of one or more diols or polyether glycols with at least two different dicarboxylic acids, anhydrides of dicarboxylic acids, or methyl esters of dicarboxylic acids, about 40–80 mole percent of said dicarboxylic acids, anhydrides of dicarboxylic acids or methyl esters of dicarboxylic acids being aromatic and about 60–20 mole percent of said dicarboxylic acids, anhydrides of dicarboxylic acids or methyl esters of dicarboxylic acids being aliphatic,
  (2) having a hydroxyl number of about 20–225,
  (3) having a molecular weight of about 500 to about 10,000,
  (4) having about two hydroxyl groups per molecule

with

(B) at least one organic diisocyanate, the molar ratio of isocyanate contained on the diisocyanate to hydroxyl contained on the copolyester being sufficient for the conditions of the reaction temperature and reaction time to form a polyester-urethane having about two hydroxyl groups per molecule, and

(C) admixing the polyester-urethane with at least one cross-linker having a functionality greater than 2, the

molar ratio of groups contained on the cross-linker to hydroxyl contained on the polyester-urethane being about 1.0/1.0 to 4.0/1.0

at a temperature and for a time sufficient to produce the cross-linked polyester-urethane.

3,804,811
SHAPED ARTICLES FROM RECONSTITUTED POLYESTER

Selwyn H. Rose, Beachwood, James T. K. Woo, Mentor on the Lake, and J. Scott Thornton, Chagrin Falls, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated

Filed April 12, 1972, Ser. No. 243,258
Int. Cl. C08g *17/06, 53/22*
U.S. Cl. 260—75 T **9 Claims**

A procedure for up-grading clean polyester material involving maintaining the material at a temperature in the range from 200 to 235° C. in a controlled atmosphere whereby the moldability and the strength and ductility of the resulting product are greatly improved as compared with the same properties of the initial material.

3,804,812
PROCESS FOR PREPARING A SEGMENTED LINEAR POLYURETHANE POLYMER

Anthony Koroscil, Trumbull, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 3, 1972, Ser. No. 303,582
Int. Cl. C08g *22/14*
U.S. Cl. 260—77.5 AM **15 Claims**

An improved process for preparing a segmented linear polyurethane polymer is provided which consists of preparing a prepolymer by reacting polytetramethylene ether glycol with methylenebis(4-phenyl-isocyanate) and chain extending the resulting isocyanate terminated prepolymer, in solution, with a suitable aliphatic diamine or a glycol, the improvement which comprises employing a polytetramethylene ether glycol having a molecular weight between 2500 and 7500. In addition, the invention also provides an improved spandex fiber prepared from such segmented linear polyurethane polymer.

3,804,813
CONTINUOUS PROCESS FOR FORMING POLYLACTAMS

Tadashi Takamiya, Masaya Kurata, and Tomiaki Kimura, Tokyo, Kazuyoshi Hisamoto, Kawasaki, and Yasuhiro Ohmura, Tokyo, Japan, assignors to Alrac Corp., Stamford, Conn., and Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Feb. 22, 1972, Ser. No. 228,164
Claims priority, application Japan, Feb. 23, 1971, 46/8,740
Int. Cl. C08g *20/16*
U.S. Cl. 260—78 P **6 Claims**

A continuous process for polymerizing lactams comprises polymerizing the lactam in sheet form, breaking up the sheet into pellets or particles, and completing the polymerization of the lactam in the particles.

3,804,814
VINYL CHLORIDE COPOLYMERS SUITABLE FOR CROSSLINKING

Henri Fassy, Mazeres-Lezons, Philippe Lalet, Orthez, and Andre Miletto, Pau, France, assignors to Societe Anonyme dite: Aquitaine-Total Organico, Tour Aquitaine, Courbevoie, France

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,605
Claims priority, application France, Dec. 23, 1970, 46,488
Int. Cl. C08f *15/32, 15/40*
U.S. Cl. 260—87.5 R **11 Claims**

This invention concerns new vinyl resins obtained by polymerizing vinyl chloride in the presence of unsaturated aliphatic monocarboxylic acids, in which the double bond is at one end of the chain, and containing between 10 and 20 carbon atoms.

3,804,815
PROCESS FOR REMOVAL OF CATALYST FROM AMORPHOUS COPOLYMERS

Larry Plonsker, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed April 5, 1972, Ser. No. 241,182
Int. Cl. C08f *1/88*
U.S. Cl. 260—80.78 **8 Claims**

A process is described for preparing an amorphous ethylene-propylene copolymer optionally containing a diene such as 1,4-hexadiene, 1,5-cyclooctadiene, dicyclopentadiene, and the like. The olefins are polymerized in the presence of a catalyst formed by mixing a vanadium compound such as a vanadium halide, oxyhalide, or alkoxide with an organo-aluminum compound such as a trialkyl aluminum, alkyl aluminum hydride, or alkyl aluminum halide. A low ash product is recovered by washing the resultant copolymer solution with aqueous caustic, separating the spent aqueous caustic solution, passing the filtered copolymer solution through a filter and removing the aqueous phase which separates from the filtered product.

3,804,816
COPOLYMERS OF ETHYLENE WITH ORGANO-VINYLTIN MONOMERS

Sergei Mikhailovich Samoilov, Simonovsky val. 8, kv. 60; Nikolai Aefredovich Plate, Novoslobodskaya ulitsa 67/69, kv. 93; Vadim Vasilievich Maltsev, ulitsa matveevskaya 10, korpus 2, kv. 169; and Viktor Nikolaevich Monastyrsky, ulitsa vasilievskaya 9, kv. 62, all of Moscow, U.S.S.R.; and Valentin Alexeevich Kargin, deceased, late of Moscow, U.S.S.R.; by Kaleria Petrovna Velichko, administratrix, ulitsa Arkadia Gaidara 7, kv. 4, Moscow, U.S.S.R.

No Drawing. Filed Sept. 22, 1970, Ser. No. 74,525
Int. Cl. C08f *15/02, 15/04*
U.S. Cl. 260—88.1 R **2 Claims**

Copolymers of ethylene with vinyl monomers, which are derivatives of vinyltin of the general formula

$$CH_2{=}CHSnR_1R_2R_3$$

wherein R_1, R_2, R_3 are the same or different radicals: alkyls with the number of carbon atoms from 1 to 6, or phenyl, the content of $[-CH_2-CH(SnR_1R_2R_3)-]$ links in the copolymer being 1–30 mol. percent, and that of $[-CH_2-CH_2-]$ links, 99–70 mol. percent. Said copolymers are produced by a method which includes copolymerizing ethylene with derivatives of vinyltin of the above-specified general formula at a molar ratio of ethylene to organovinyltin monomers equal to 20–98:80–2 respectively, under a pressure of 50–3000 atm., at a temperature of 50–300° C., in the presence of initiators of free-radical type. The copolymers thus produced can be used as antiwear additions to lubricants.

3,804,817
HIGHLY FLUORINATED POLYMERIC MATERIAL

Leo A. Wall, McLean, Va., and Daniel W. Brown, Bethesda, Md., assignors to the United States of America as represented by the Secretary of the Army

Continuation of abandoned application Ser. No. 58,506, July 27, 1970. This application Sept. 14, 1972, Ser. No. 289,019
Int. Cl. C08f *15/06*
U.S. Cl. 260—87.5 A **1 Claim**

Highly fluorinated polymeric materials characterized by improved solubility and stability are prepared by treatment of monomers with gamma rays at high pressure. Such materials, including poly-5,5,5,4,4,3,3-heptafluoropentene-1 and poly-4,4,4,3,3-pentafluorobutene-1 and co-

polymers thereof with tetrafluorethylene, exhibit unusually good physical properties and are tough, clear and film forming.

3,804,818

PROCESS FOR RECOVERY OF ROSIN AND FATTY ACID FROM ALKALINE BLACK LIQUOR

Paul D. Patrick, Jr., and Brantley D. Thomas, Jr., Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 143,617, May 14, 1971. This application Sept. 12, 1972, Ser. No. 288,458

Int. Cl. C09f *8/07*

U.S. Cl. 260—97.5 **12 Claims**

The intimate mixing with a sufficient amount, e.g., a trace to 0.025% by weight, of a high molecular weight, water-soluble cationic polymer has been found to increase the rate of separation of crude tall oil from the brine and lignin of alkaline black liquor soap skimmings, as well as decrease the pitch yield, thereby increasing the yield of rosin and fatty acids.

3,804,819

RECOVERY OF FATTY ACIDS FROM TALL OIL HEADS

Henry R. Wengrow, Wilmer B. Stoufer, Charles W. Morris, and Dwight E. Leavens, Jacksonville, and Gerald S. Watkins, Apalachicola, Fla., assignors to SCM Corporation, Cleveland, Ohio

Filed May 3, 1972, Ser. No. 249,868

Int. Cl. C09f *1/00*

U.S. Cl. 260—97.6 **12 Claims**

Disclosed is a method for recovering higher fatty acids from tall oil by fractionally distilling the tall oil to isolate the distillate fraction known as tall oil heads, saponifying fatty acids in the tall oil heads, solvent extracting unsaponified materials from the tall oil heads soap, acidulating the extracted tall oil heads soap to reconstitute the free fatty acid and stripping the free fatty acids with or without the presence of a boron compound, such as boric acid, to produce the specific fatty acids desired. In a preferred practice, the saponification reaction is carried out at a pH of 7 to 8.5 for improved color in the distilled fatty acid fractions. Bleaching of the fatty acids with activated carbon or clay can be employed if desired.

3,804,820

N-(SUBSTITUTED-α-PENICILLOYL)-AMINO CARBOXYLIC ACIDS

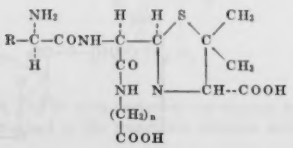
Peter Quitt, 40 Mittlerer Rainweg, Fullinsdorf, Switzerland, and Karl Vogler, deceased, late of Riehen, Switzerland, by Heinrich Vogler, Franziska Elisabeth Vogler and Niklaus Eduard Vogler, sole heirs at law, and Alain de Weck, Marly-le-Petit, Switzerland

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,977

Int. Cl. C07c *103/52;* **C07d** *99/14, 91/44*

U.S. Cl. 260—112.5 **5 Claims**

Penicilloic acid derivatives represented by the formula



(I)

wherein *n* is an integer from 1 to 5 inclusive and R is phenyl or 1,4-cyclohexadienyl are disclosed. These penicilloic acid derivatives are useful for the inhibition of allergic reactions which occur on administration of penicillin.

3,804,821

METHOD FOR THE DIRECT ACYLATION OF AMINOBENZOIC ACIDS

Peter L. de Benneville, Philadelphia, William J. Godfrey, Warminster, and Homer J. Sims, Horsham, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed May 24, 1972, Ser. No. 256,551

Int. Cl. C07c *103/20, 103/52*

U.S. Cl. 260—112.5 **12 Claims**

N-(N-acylaminoacyl)aminobenzoic acids are prepared by reacting a mixed anhydride of an N-acylamino acid with an aminobenzoic acid or an aminohippuric acid. A strong inorganic or organic acid can be used to catalyze the reaction.

3,804,822

DIARYLSELENOCARBAZONE COMPOUNDS

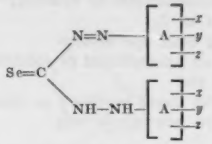
John Kazan, Jr., Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 853,506, Aug. 27, 1969, now Patent No. 3,575,872, dated Apr. 20, 1971. This application Jan. 27, 1971, Ser. No. 110,334

Int. Cl. C07c *107/00*

U.S. Cl. 260—149 **2 Claims**

A new class of diarylselenium compounds are provided which have the following general formula:



wherein A is an aryl radical containing from 6 to about 12 carbon atoms and *x*, *y* and *z* are individually selected from the group consisting of hydrogen, lower alkyl, hydroxy, halo, nitro, amino, di-lower alkylamino or phenylazo.

3,804,823

HETEROCYCLIC CONTAINING MONOAZO COMPOUNDS

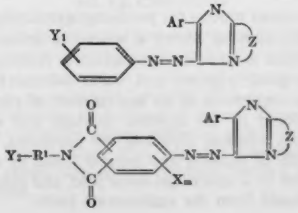
John G. Fisher and Gary T. Clark, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

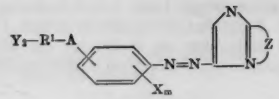
No Drawing. Filed Feb. 15, 1972, Ser. No. 226,552

Int. Cl. C09b *29/36*

U.S. Cl. 260—158 **10 Claims**

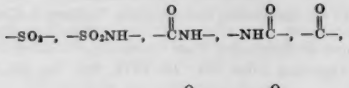
Compounds of the formula:



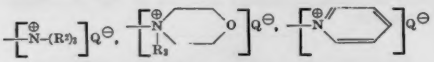


wherein

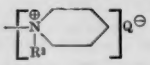
R^1 represents alkylene;
A represents



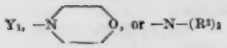
Y_1 represents



or



Y_2 represents



R^2 represents alkyl;
X represents hydrogen, halogen, alkyl, cyano, nitro, alkylsulfonyl, alkoxycarbonyl or hydroxy;
m represents 1 or 2;
Q represents a basic dye anion;
Ar represents an unsubstituted or substituted carbocyclic acyl group; and
Z represents the atoms necessary to complete a five or six membered heterocyclic ring.

The monoazo compounds are useful as dyes for hydrophobic textile materials, such as polyester and cellulose acetate. The cationic monoazo compounds are useful as dyes for acrylic, modacrylic and acid-modified polyester textile materials.

3,804,824

PROCESS FOR PURIFYING ORGANIC AZO PIGMENTS BY CENTRIFUGATION OF AN AGGLOMERATE OF THE PIGMENT AND AN ORGANIC LIQUID FROM AN AQUEOUS SLURRY

Herbert R. Kaiser and Ronald G. Sonderhouse, Saginaw, Mich., assignors to Baker Perkins, Inc., Saginaw, Mich.

Filed Jan. 26, 1970, Ser. No. 5,695

Int. Cl. C09b *67/00*

U.S. Cl. 260—208 **6 Claims**

A continuous process for purifying organic pigments including the steps of adding a water-immiscible affinitive organic liquid to an acidic aqueous slurry containing finely divided organic pigment and water soluble impurities, forming a suspension of an agglomerate of pigment and organic liquid in the aqueous solution and separating the aqueous solution, including the impurities, from the agglomerate of pigment and organic liquid by subjecting the solution to a centrifugal force field, and removing the organic liquid from the agglomerate paste.

3,804,825

CARBOXYLIC ACYL DERIVATIVES OF DIGOXIN

Walter Lösel and Herbert Merz, Ingelheim am Rhein, Wolfgang Hoefke, Budenheim, and Werner Traunecker, Munster-Sarmsheim, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

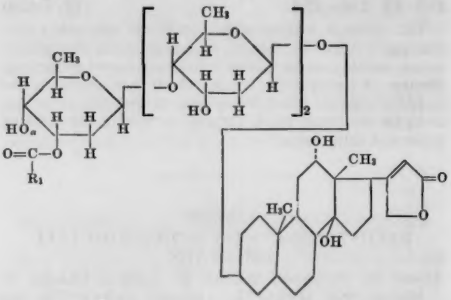
No Drawing. Filed Jan. 5, 1972, Ser. No. 215,666

Claims priority, application Germany, Jan. 4, 1971, P 21 01 595.2

Int. Cl. C07c *173/00*

U.S. Cl. 260—210.5 **11 Claims**

Compounds of the formula



wherein

R_1 is alkyl of 2 to 12 carbon atoms, halo-(alkyl of 1 to 4 carbon atoms), aryl-(alkyl of 1 to 4 carbon atoms), cycloalkyl-(alkyl of 1 to 4 carbon atoms) or cycloalkyl of 3 to 8 carbon atoms;

the compounds are useful as cardiotonics.

3,804,826

THIOPYRIMIDINE DERIVATIVES

Karl-Heinz Scheit, Gottingen, and Peter Faerber, Hetjershausen bei Gottingen, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

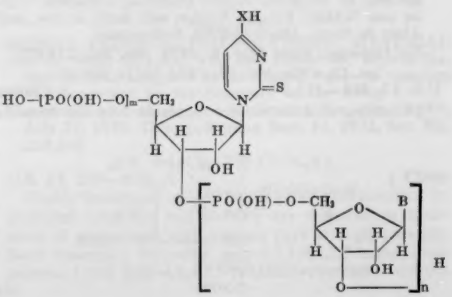
No Drawing. Filed Aug. 20, 1971, Ser. No. 173,656

Claims priority, application Germany, Aug. 22, 1970, P 20 41 735.0

Int. Cl. C07d *51/50, 51/52*

U.S. Cl. 260—211.5 R **15 Claims**

Compounds of the formula



wherein B is a pyrimidine or purine group; X is S or NH; m is an integer from 1 to 3, inclusive; and n is an integer from 0 to 2,000, inclusive, with the provision that the sum of $m+n$ is at least 2; the metal and ammonium salts thereof; and the corresponding disulfides, possess interferon production stimulating activity which renders them useful in the prevention and treatment of viral infections.

3,804,827

1-β - D - ARABINOFURANOSYLCYTOSINE - 3',5'-CYCLIC PHOSPHATE AND DERIVATIVES THEREOF

Roland K. Robins, Santa Ana, and Robert A. Long, Costa Mesa, Calif., assignors to ICN Pharmaceuticals, Inc., Pasadena, Calif.

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,127
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **13 Claims**

As antiviral agents, 1-β-D-arabinofuranosylcytosine-3', 5'-cyclic phosphates and derivatives thereof, e.g., acylated, 5-halogenated and N^3-oxide analogs. The principal compound is prepared by cyclizing cytidylic acid 2'(3') mixed isomers to the 2',3'-cyclic phosphate, which is dehydrated to yield the 3' phosphate, the latter in turn undergoing cyclization to afford the 3',5'-cyclic nucleotide. Novel 4-thio analogs of the principal compound variously exhibiting in vitro tumor inhibitory and immunosuppressant properties are also disclosed, as are precursors useful in their synthesis.

3,804,828

EPICHLOROHYDRIN-INHIBITED, STABILIZED RETORT STARCHES

Chester D. Szymanski, Martinsville, Martin M. Tessler, Edison, and Harvey Bell, North Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed May 8, 1972, Ser. No. 251,344
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R **4 Claims**

Epichlorohydrin-inhibited hydroxypropyl starch products are described, said products displaying a thin viscosity on normal cooking with water but display a higher viscosity upon being heated at retort temperatures. Such starch products find a particular use in the commercial preparation of canned foods.

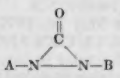
3,804,829

DIAZIRIDINONES

Frederick D. Greene, 25 Canterbury Road, Winchester, Mass. 01890

No Drawing. Continuation of applications Ser. No. 713,305, Mar. 15, 1968, and Ser. No. 482,932, Aug. 26, 1965, both now abandoned. This application Jan. 11, 1972, Ser. No. 217,043
Int. Cl. C07d *45/00*
U.S. Cl. 260—239 AA **5 Claims**

The preparation, reactions and uses of the diaziridinones, a new class of small ring heterocycles, are described in detail. Structurally, these diaziridinones are 2,3-diazacyclopropanones which are characterized by the formula



in which A and B each represent an organic substituent which is attached to the respective nitrogen atoms of the diaziridinone through a tertiary carbon atom and which is selected from the group consisting of (a) alkyl groups, (b) alkenyl groups, (c) alkynyl groups, (d) aralkyl groups, and (e) substituted-alkyl, -alkenyl, -alkynyl, and -aralkyl groups containing within the structure of such substituent at least one functional group which is unreactive with respect to the diaziridinone ring and which is selected from the group of functional groups consisting of tertiary amines, pyridines, quinolines, aldehydes, ketones, esters, lactones, carbonates, halides, ethers, nitro groups azo groups, nitriles, sulfones, anhydrides, amides, N,N-dialkylamides, N-alkylamides, N-arylamides, N-acylamines, N-oxides, sulfonamides, sulfides, sulfoxides, epoxides, and isocyanates.

The diaziridinone ring is reactive towards acids, towards nucleophiles that are easily oxidized, and towards strong nucleophiles, on the basis of which reactivity the diaziridinones may be used as intermediates in the preparation of N,N'-disubstituted hydrazines (which, in turn, are useful in the preparation of dyestuffs, pharmaceuticals and insecticides), or as curing agents, blowing agents and as free radical initiators in connection with various polymerization reactions and polymer systems.

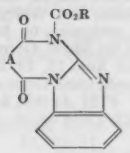
3,804,830

ALKYL 1,N-(SUBSTITUTED ALKYLENE)-2-BENZIMIDAZOLECARBAMATES

William Philip Langsdorf, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 779,221, Nov. 26, 1968. This application May 5, 1971, Ser. No. 140,568
Int. Cl. C07d *51/18, 53/02*
U.S. Cl. 260—239.3 T **6 Claims**

The novel compounds of the following structure are useful as fungicides and mite ovicides:



where R is methyl or ethyl, and A is a methylene, ethylene or vinylene group as set forth hereinafter.

3,804,831

WATER-INSOLUBLE STYRYL DYESTUFFS CONTAINING A PYRIDYL-LOWER ALKYL GROUP

Visvanathan Ramanathan, Klybeckstrasse 18, Basel, Switzerland

No Drawing. Continuation of application Ser. No. 872,362, Oct. 29, 1969, which is a continuation-in-part of application Ser. No. 621,154, Mar. 7, 1967, both now abandoned. This application Apr. 5, 1972, Ser. No. 241,422
Claims priority, application Switzerland, Mar. 17, 1966, 3,972/66
Int. Cl. C09b *23/14*
U.S. Cl. 260—240 R **8 Claims**

The present invention concerns water-insoluble styryl dyestuffs which are characterized by the presence of a pyridylalkyl group, which is attached directly or via an oxyalkyl or an aminoalkyl group to an amino group which is in para-position to the methine group. These new dyestuffs are useful for dyeing polyester, polyacrylonitrile or cellulose acetate fibers from aqueous dispersion. Strong greenish yellow dyeings of excellent fastness properties are obtained.

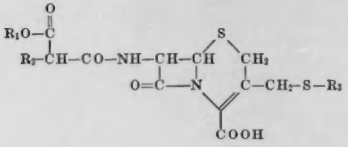
3,804,832

DERIVATIVES OF 3-HETEROCYCLYLMERCAPTOMETHYL 7-AMINOCEPHALOSPORANIC ACIDS

Hans Bickel, Binningen, and Johannes Mueller, Arlesheim, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed April 28, 1971, Ser. No. 138,353
Claims priority, application Switzerland, May 4, 1970, 6,671/70; June 4, 1970, 8,379/70; July 6, 1970, 10,157/70; Dec. 10, 1970, 18,359/70
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 11 Claims

Compounds of the formula



in which R_1 represents a lower alkyl residue, and R_2 represents hydrogen or a lower alkoxy-carbonyl residue, and in which R_3 represents a heterocyclic residue of aromatic character bound through a carbon atom to the sulphur atom, and which heterocyclic residue contains at least 2 nitrogen atoms and also a further heteroatom which is selected from the group consisting of nitrogen, oxygen and sulphur. They have antimicrobial activity.

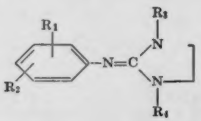
3,804,833

2-PHENYLIMINO-IMIDAZOLIDINES, THEIR 2-ANILINE - 2 - IMIDAZOLINE TAUTOMERS AND SALTS THEREOF

Helmut Stähle, Herbert Köppe, and Werner Kummer, Ingelheim am Rhein, and Wolfgang Hoefke, Budenheim, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing. Filed Aug. 15, 1972, Ser. No. 280,774
Claims priority, application Germany, Aug. 20, 1971, P 21 41 818.8
Int. Cl. C07d *49/30, 49/36*
U.S. Cl. 260—253 5 Claims

Compounds of the formula

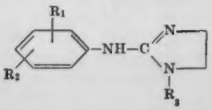


wherein

R_1 and R_2, which may be identical to or different from each other, are each hydrogen, chlorine, bromine, trifluoromethyl, cyano, methoxy, methyl or ethyl, and

R_3 and R_4, which may be identical to or different from each other, are each hydrogen, alkyl of 1 to 3 carbon atoms, cycloalkyl of 5 to 7 carbon atoms or alkenyl of 3 to 5 carbon atoms,

provided, however, that R_3 and R_4 are other than both hydrogen at the same time, their tautomers of the formula



wherein

R_1 and R_2 have the meanings defined above, and

R_3 has the meanings defined above except hydrogen,

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as hypotensives.

3,804,834

1-(2',3',4'-TRISUBSTITUTED-PHENYL)-2-AMINO-ALKANOLS-(1) AND SALTS THEREOF

Anton Mentrup, Kurt Schromm, Otto Thomä, and Karl Zeile, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing. Continuation-in-part of application Ser. No. 713,265, Oct. 16, 1967, now Patent No. 3,657,244, dated Apr. 18, 1972. This application Jan. 12, 1972, Ser. No. 217,292
Int. Cl. C07c *91/22*
U.S. Cl. 260—254 2 Claims

The compounds are 1-(2',3',4'-trisubstituted-phenyl)-2-amino-alkanols-(1) and acid addition salts thereof, useful as sympathomimetics in warm-blooded animals.

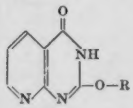
3,804,835

PYRIDO[2,3-d]PYRIMIDIN-4-(3H)-ONES

Fritz Wiedemann and Max Thiel, Mannheim, Kurt Stach, Mannheim-Waldhof, Egon Roesch, Lampertheim, and Klaus Hardebeck, Ludwigshafen (Rhine), Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed Mar. 9, 1971, Ser. No. 122,497
Claims priority, application Germany, Mar. 28, 1970, P 20 14 978.4
The portion of the term of the patent subsequent to July 31, 1990, has been disclaimed
Int. Cl. C07d *57/20*
U.S. Cl. 260—256.4 F 5 Claims

Pyrido[2,3-d]pyrimidin-4(3H)-ones of the general formula



(I)

wherein

R is a straight or branched-chain lower alkyl, which can be substituted by hydroxyl groups or alkoxy radicals, or an alkenyl radical,

and the salts thereof with physiologically compatible acids and bases.

These compounds exhibit long-lasting diuretic action.

3,804,836

N-PHENYL-N'-DIALKYLPHOSPHINYLALKYL-PIPERAZINES

Edward J. Glamkowski, Warren, and Joseph T. Strupczewski, Piscataway, N.J., and Erhard H. Wolf, Hofheim, Taunus, Germany, assignors to American Hoechst Corporation, Bridgewater, N.J.

No Drawing. Filed May 26, 1972, Ser. No. 257,353
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 K 6 Claims

N-phenyl-N'-dialkylphosphinylalkyl-piperazines are obtained by condensing N-phenyl piperazines with alkylating phosphine oxides. They have utility as antihypertensive agents.

3,804,837

ALKOXYNAPHTHALIMIDOTHIAZOLIUM SALTS, USEFUL AS OPTICAL BLEACHING AGENTS

Georges Raymond Henry Mingasson, Paris, and Annick Marthe Suzanne Simone Domergue, Eaubonne, France, assignors to Ugine Kuhlmann, Paris, France

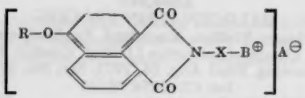
No Drawing. Original application Aug. 9, 1968, Ser. No. 751,349, now Patent No. 3,649,633. Divided and this application Dec. 1, 1971, Ser. No. 203,873

Claims priority, application France, Aug. 11, 1967, 117,728

Int. Cl. C07d *91/30*

U.S. Cl. 260—270 R 3 Claims

Compound of the formula:



in which R is an alkyl radical, or a hydroxy or alkoxy substituted alkyl radical, said alkyl having one to four carbon atoms, X is a direct linkage or p-phenylene, $B^{\oplus}$ is an $N^{\oplus}$-(lower alkyl) cycloammonium group in which the cycloammonium group is thiazolium and is attached to X through a carbon atom, the remaining carbon atoms in $B^{\oplus}$ being unsubstituted or substituted by chlorine, lower alkyl, phenyl, or methylthio groups, and $A^{\ominus}$ is a colorless monovalent anion. These compounds can be used as fluorescent brightening agents for fibres based on acrylonitrile polymers or copolymers.

3,804,838

ALKOXYNAPHTHALIMIDO - 1,2,4 - TRIAZOLIUM SALTS USEFUL AS OPTICAL BLEACHING AGENTS

Georges Raymond Henry Mingasson, Paris, and Annick Marthe Suzanne Simone Domergue, Eaubonne, France, assignors to Ugine Kuhlmann, Paris, France

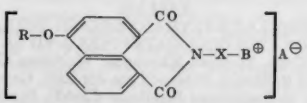
No Drawing. Original application Aug. 9, 1968, Ser. No. 751,349, now Patent No. 3,649,633, dated Mar. 14, 1972. Divided and this application Dec. 1, 1971, Ser. No. 203,908

Claims priority, application France, Aug. 11, 1967, 117,728

Int. Cl. C07d *55/06*

U.S. Cl. 260—270 R 5 Claims

Compound of the formula:



in which R is an alkyl radical, or a hydroxy or alkoxy substituted alkyl radical, said alkyl having one to four carbon atoms, X is a direct linkage or p-phenylene, $B^{\oplus}$ is an $N^{\oplus}$-(lower alkyl) cycloammonium group in which the cycloammonium group is triazolium and is attached to X through a carbon atom, the remaining carbon atom in $B^{\oplus}$ being unsubstituted or substituted by chlorine, lower alkyl, phenyl, or methylthio groups, and $A^{\ominus}$ is a colorless monovalent anion. These compounds can be used as fluorescent brightening agents for fibres based on acrylonitrile polymers or copolymers.

3,804,839

TETRAHYDROQUINOLINE PHENOXYACETIC ACID DERIVATIVES

Johann Dahm, Joachim Borck, Herbert Nowak, Zdenek Simane, and Detlev Kayser, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

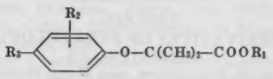
No Drawing. Filed Mar. 13, 1972, Ser. No. 234,343

Claims priority, application Germany, Mar. 15, 1971, P 21 12 272.5

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R 6 Claims

Compounds of the formula



wherein R_1 is H or alkyl of 1–10 carbon atoms; R_2 is H, alkyl of 1–4 carbon atoms or halogen; and R_3 is pyrrolidino, piperidino, 3-hydroxypyrrolidino, 3-hydroxypiperidino, isoindolino optionally substituted in the aromatic ring by one or more alkyl, alkoxy groups and halogen or by a methylenedioxy group, 1,2,3,4-tetrahydroquinolino, 1,2,3,4-tetrahydro-4-quinolyl, 1-alkyl-1,2,3,4-tetrahydro-4-quinolyl, 1-benzimidazolyl,, 2-alkyl-1-benzimidazolyl, 1-pyrryl, 1-benzotriazolyl, 2-indanyl or 4-piperidinophenyl, alkyl and alkoxy in each instance containing 1–4 carbon atoms, and salts thereof, possess chloresterol and triglyceride blood serum level-lowering and enzyme-inducing activity.

3,804,840

MANUFACTURE OF HALOGENATED PYRIDINE DERIVATIVES

Roy Dennis Bowden and Thomas Seaton, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 1, 1972, Ser. No. 248,810

Claims priority, application Great Britain, May 4, 1971, 12,903/71,

Int. Cl. C07d *31/26*

U.S. Cl. 260—290 HL 9 Claims

A process for the manufacture of a chloropyridine (especially pentachloropyridine) which comprises interacting glutaronitrile with chlorine in the vapor phase at an elevated temperature.

3,804,841

AMINO-ACID ESTER DERIVATIVES OF 2H-CHROMEN-5-OL

Raj K. Razdan, Belmont, Harry G. Pars, Lexington, and Klaus Kurt Weinhardt and John F. Howes, Cambridge, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

No Drawing. Filed July 16, 1971, Ser. No. 163,509

Claims priority, application Great Britain, July 17, 1970, 34,861/70

Int. Cl. C07d *31/42*

U.S. Cl. 260—293.58 6 Claims

Certain amino acid ester derivatives and their acid addition salts which have anti-depressant and anti-anxiety properties. The amino acid ester group is an esterified 5-OH pyridyl benzopyran.

3,804,842

1,1'-CARBONYL-BIS (CARBOXYPIPERIDINES)

Daniel Ashton Dimming, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Original application Nov. 12, 1969, Ser. No. 876,134, now Patent No. 3,630,999. Divided and this application July 12, 1972, Ser. No. 168,784
Int. Cl. C07d *29/28*
U.S. Cl. 260—293.63 3 Claims

Difunctional monomers containing a tetrasubstituted urea linkage are prepared and used to prepare condensation polymers having a tetrasubstituted urea group in the polymer chain. The polymers have enhanced thermal stability because degradative reactions involving the urea hydrogen atoms are not possible. The polymers are film forming materials and have high melting points.

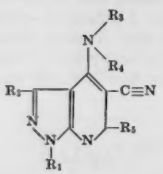
3,804,843

AMINO DERIVATIVES OF PYRAZOLOPYRIDINE CARBONITRILES

Theodor Denzel, Nuremberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 211,675, Dec. 23, 1971. This application Nov. 24, 1972, Ser. No. 309,291
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 9 Claims

New amino derivatives of pyrazolo[3,4-b]pyridine-5-carbonitriles have the general formula



They are useful as central nervous system depressants. In addition, they also increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,804,844

PROCESS FOR PREPARING PYRIDYLCARBAMATES

Richard Garth Pews and Lennon H. McKendry, Midland, Mich., and Ralph M. Rodia, Salem, Oreg., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 94,622, Dec. 2, 1970. This application Aug. 31, 1972, Ser. No. 285,503
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 AM 9 Claims

There is disclosed herein a process for the preparation of aromatic amines and carbamates by reacting certain carbocyclic and heterocyclic aromatic compounds, ring-substituted with at least one displaceable substituent, with alkali metal cyanates and water or an alkanol in the presence of a high dielectric-aprotic solvent.

3,804,845

MANUFACTURE OF BIPYRIDYLS

Geoffrey James Moore, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 19, 1972, Ser. No. 264,237
Claims priority, application Great Britain, June 24, 1971, 29,584/71
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 D 20 Claims

A process for the manufacture of 4,4'-bipyridyls and/or 2,2' - bipyridyls which comprises treating a 4-halopyridine or a 2-halopyridine with an alcohol in the presence of palladium and under basic conditions.

3,804,846

PROCESS FOR PURIFYING 2-MERCAPTOBENZOTHIAZOLE

Ryohei Okamoto, Tokyo, Japan

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,867
Claims priority application Japan, Aug. 14, 1970, 45/70,706
Int. Cl. C07d *91/48*
U.S. Cl. 260—306 10 Claims

2-mercaptobenzothiazole is purified by reacting an aqueous alkaline solution of crude 2-mercaptobenzothiazole with an oxidizing agent while passing air through the aqueous alkaline solution at a temperature of 30° C. or higher and coagulating the resulting oxidation products on carbon powders thereby to remove the oxidation products.

3,804,847

HALOGENATION PROCESS

Keith Blakeney Mallion, Knutsford, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,400
Int. Cl. C07d *91/18*
U.S. Cl. 260—306.7 10 Claims

Improvement to known halogenation process for manufacture of 2-imino-3-(2-halogeno-2-phenylethyl)thiazolidine derivative in which corresponding hydroxy derivative is reacted with a chlorinating or brominating agent, for example thionyl chloride, and then with sulphuryl chloride. Product has lower content of unwanted styryl by-product than that obtained by known halogenation process. Product can be ring-closed by a known process to give tetramisole having lower content of said by-product than that obtained by corresponding known process.

3,804,848

ARYLIMINOTHIAZOLIDINES

Otto Behner and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 129,265, Mar. 29, 1971. This application Dec. 6, 1971, Ser. No. 205,348
Claims priority, application Germany, Apr. 15, 1970, P 20 17 969.5
Int. Cl. C07d *91/18*
U.S. Cl. 260—306.7 39 Claims

Thiazolidines bearing in the 3-position a lower alkyl, lower alkenyl or lower chloroalkenyl group and bearing in the 2-position an arylimino group, which in turn is substituted on the carbon atom adjacent to the imino group, are acaricides. The compounds, of which 2-(2-chlorophenylimino) - 3-methylthiazolidine is representative, can be prepared in a number of ways such as through cyclization of an appropriately substituted thiourea.

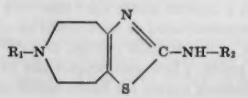
3,804,849

2-AMINO-4,5,7,8-TETRAHYDRO-6H-THIAZOLO OR OXAZOLO[5,4-d]AZEPINES AND SALTS

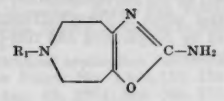
Gerhart Griss, Manfred Kleemann, Wolfgang Grell, and Helmut Ballhause, Biberach am der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,065
Claims priority application, Germany, Aug. 14, 1970, P 20 40 510.1; June 2, 1971, P 21 27 267.3
Int. Cl. C07d *99/04, 99/10*
U.S. Cl. 260—306.8 F 10 Claims

Compounds of the formula



or



wherein

R_1 is hydrogen, straight or branched alkyl of 1 to 4 carbon atoms, hydroxy-alkyl of 1 to 4 carbon atoms, allyl, cycloalkyl, hexahydrobenzyl, phenyl, phenethyl, benzyl, mono- or di-halobenzyl, mono-, di- or tri-methoxybenzyl, trifluoromethyl-benzyl or (alkyl of 1 to 3 carbon atoms)-benzyl, and

R_2 is hydrogen, straight or branched alkyl of 1 to 5 carbon atoms, allyl, cycloalkyl, phenyl, benzyl or phenethyl,

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as hypotensives, sedatives, antitussives and anti-phlogistics.

3,804,850
METHOD OF PREPARING 1,5-DISUBSTITUTED-2-HALOIMIDAZOLES

John Martin, Wayland and Francis Johnson, Newton Lower Falls, Mass., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,741
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **2 Claims**

Various 1,5-disubstituted-2-haloimidazoles are prepared employing a three step method which involves cyclizing a substituted α-cyanoaminonitrile to a substituted 2-halo-4-aminoimidazole followed by diazotization of the amino group and the subsequent deamination of the thus formed diazonium salt. The 1,5-disubstituted-2-haloimidazoles are intermediates useful for preparing 1,5-disubstituted-2-nitroimidazoles which are useful anti protozoal agents.

3,804,851
DERIVATIVES OF 2-CYCLOALKYL-1-PHENYL-3,4-DIHYDRONAPHTHALENES

Daniel Lednicer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Jan. 2, 1968, Ser. No. 694,811, now Patent No. 3,567,737. Divided and this application Nov. 5, 1970, Ser. No. 87,326
Int. Cl. C07c *43/20;* **C07d** *27/04*
U.S. Cl. 260—326.5 M **3 Claims**

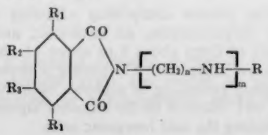
Derivatives of 2 - cycloalkyl - 1-phenyl-3,4-dihydronaphthalenes and processes for the preparation of the same The novel compounds have utility as anti-fertility, estrogenic, anti-estrogenic, anti-spermatogenic cholesterol lowering and lipid normalizing agents.

3,804,852
N-(AMINOALKYL)PHTHALIMIDES

Bernard Haemmerle, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France and Entreprise de Recherches et d'Activites Petrolieres, Paris, France

No Drawing. Filed Jan. 19, 1971, Ser. No. 107,861
Claims priority, application France, Jan. 21, 1970, 7002200
Int. Cl. C07d *27/52*
U.S. Cl. 260—326 C **28 Claims**

New organic compounds useful as additives for motorfuels are of the formula



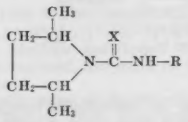
wherein the hydrocarbon ring is a cyclohexanic, aromatic, dihydroaromatic or tetrahydroaromatic ring, R_1, R_2, R_3 and R_4 are each a hydrogen atom or an aliphatic, linear or branched, saturated or unsaturated hydrocarbon radical, R_1 to R_4 having as a whole from 0 to 30 carbon atoms, R_1 and R_4 being optionally interconnected so as to form a bicyclic compound, the assembly $—R_1—R_4$ comprising 1 to 2 carbon atoms, n is an integer from 2 to 10, m is an integer from 0 to 10 and R is a monovalent aliphatic hydrocarbon radical containing from 1 to 30 carbon atoms.

3,804,853
2,5-DIMETHYL-1-PYRROLIDINECARBOXANILIDES AND THIOCARBOXANILIDES

John Joseph D'Amico, Akron, and Frederic Gerald Bollinger, Copley, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 848,331, filed Aug. 7, 1969. This application Nov. 15, 1971, Ser. No. 199,013
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.4 **4 Claims**

A compound of the formula:



in which X is oxygen or sulfur and R is halophenyl, alkylphenyl, alkylthiophenyl, phenoxyphenyl or trifluoromethylphenyl.

3,804,854
5,5-DIPHENYL-2-PYRROLIDINONE COMPOUNDS

Bernard Loev, Broomall, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,333
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 FL **8 Claims**

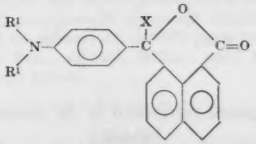
5,5-diphenyl-2-pyrrolidinones optionally having a 1-hydroxy or 1-lower alkoxy substituent are prepared by cyclizing a diphenylbutenamide or the 1-hydroxy or 1-lower alkoxy derivative thereof. These 5,5-diphenyl-2-pyrrolidinones have coronary vasodilator activity.

3,804,855
NAPHTHALIDE COMPOUNDS

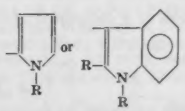
Sheldon Farber, Appleton, Wis., assignor to The National Cash Register Company, Dayton, Ohio.

No Drawing. Filed Mar. 22, 1972, Ser. No. 237,000
Int. Cl. C07d *27/20; 27/56*
U.S. Cl. 260—326.14 R **7 Claims**

Colorless, but colorable naphthalide compounds are disclosed, which are represented by the formula:



wherein X is



each R is hydrogen, an alkyl radical having 1 to 5 carbon atoms, phenyl or benzyl and each R′ is hydrogen or an

alkyl radical having 1 to 5 carbon atoms. These compounds are used in pressure-sensitive record material and in mark-forming manifold systems.

3,804,856

N-PHENYLSUCCINIMIDES

Shigehiro Ooba, Takarazuka, Toshiaki Ozaki, Sigeo Yamamoto, Toyonaka, and Katsutoshi Tanaka, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan.

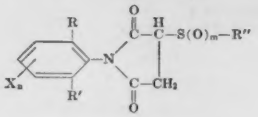
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,713

Claims priority, application Japan, Sept. 4, 1970, 45/78,084; Dec. 7, 1970, 45/108,732

Int. Cl. C07d *27/10*

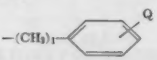
U.S. Cl. 260—326.44 **9 Claims**

A novel N-phenylsuccinimide derivative having the formula,



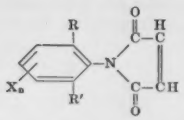
(I)

wherein R and R′ are individually halogen or a lower alkyl; X is halogen, a lower alkyl, a lower alkoxy or nitro; R″ is an alkyl having 1 to 10 carbon atoms, an alkenyl, a group of the formula,



wherein Q is hydrogen, halogen a lower alkyl, a lower alkoxy or nitro, and *l* is 1, 2, 3 or 4; a group of the formula,

wherein Z is hydrogen, halogen, a lower alkyl, a lower alkoxy or nitro; α-furfuryl or a group of the formula, —CH_2COOR''' wherein R‴ is a lower alkyl, *n* is 0, 1, 2 or 3; and *m* is 0, 1 or 2, exhibits an extremely strong microbicidal activity on a markedly wide scope of microorganisms and has a low toxicity. The above-mentioned compound can be prepared by the addition reaction of an N-phenylmaleimide derivative represented by the formula,

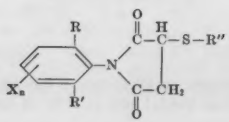


(II I

with a compound represented by the formula

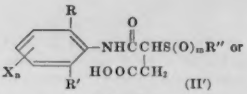
R″SH (IV)

or by the oxidation of a compound of the formula,

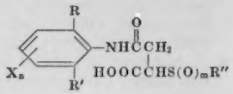


(I′)

which is obtained by the above-mentioned reaction. Alternatively, the said novel N-phenylsuccinimide derivative can be prepared by dehydrating and ring-closing a compound of the formula,



(II′)



(II)

3,804,857

BENZO-DITHIAPYRONE DICARBOXYLIC ACIDS

Hugh Cairns, Loughborough, and Richard Hazard, Cropston, England, assignors to Fisons Limited, London, England

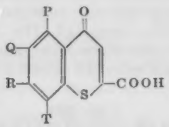
No Drawing. Filed June 13, 1972, Ser. No. 262,334

Claims priority, application Great Britain, June 24, 1971, 29,573/71

Int. Cl. A61k *27/00;* **C07d** *65/08*

U.S. Cl. 260—327 TH **9 Claims**

There are described compounds of Formula I,



(I)

in which

an adjacent pair of P, Q, R and T form a chain —CO—CH=C(COOH)—S—, and

the remainder of P, Q, R and T, which may be the same or different, each represent hydrogen; alkyl; alkoxy; alkenyl; alkenyloxy; alkyl or alkoxy substituted by a hydroxy, alkoxy, aryl or halo group; amino; mono- or di-lower alkyl amino; aminoalkoxy; amino alkoxy substituted by a lower alkyl group; nitro; hydroxy; halogen; acyl or aryloxy.

and pharmaceutically acceptable derivatives thereof.

There are also disclosed pharmaceutical compositions for treating intrinsic and allergic asthma containing the compounds and methods for making the compounds.

3,804,858

PROCESS OF RECOVERING SPECTINOMYCIN

Heinz F. Meyer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 14, 1971, Ser. No. 143,584

Int. Cl. C07d *15/12*

U.S. Cl. 260—340.3 **12 Claims**

A desalting process comprising adjusting an aqueous solution of spectinomycin, an antibiotic, and inorganic salts to a pH of from about 8 to about 11 and to a temperature below about 20° C., adding a solvent selected from the group consisting of acetone, isopropanol, n-propanol, and tert. butanol to the adjusted aqueous solution and precipitating the said inorganic salts.

3,804,859

3-ETHYLENEDIOXY-4,4-SECO-GONENE-5-ONES

Jacques Prost-Marechal, Paris, and Georges Tomasik, Rosny-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Original application Jan. 23, 1969, Ser. No. 793,554, now Patent No. 3,646,151. Divided and this application Aug. 19, 1971, Ser. No. 173,306
Claims priority, application France, Jan. 26, 1968, 13,763
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 2 Claims

3 - ethylenedioxy - 13β - R - 4,5 - seco-gonene-5-ones having a ketone or a β-hydroxyl group in the 17 position, where R is alkyl having 1 to 4 carbon atoms, which are useful as intermediates in the production of known steroids having useful physiological properties.

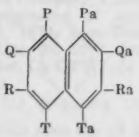
3,804,860

CHEMICAL COMPOUNDS

Peter Bennett Johnson and Thomas Brian Lee, Loughborough, England, assignors to Fisons Limited, London, England

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,349
Int. Cl. C07d *7/32*
U.S. Cl. 260—345.2 9 Claims

There are described compounds of Formula I,



(I)

wherein an adjacent pair of the groups P, Q, R and T and an adjacent pair of the groups Pa, Qa, Ra and Ta each form a chain —COCH=C(COOH)—O— which may be bonded to the naphthalene nucleus in either sense, and

the remainder of P, Q, R, T, Pa, Qa, Ra and Ta, which may be the same or different, each represent hydrogen; alkyl; alkoxy; alkenyl; alkenyloxy; or substituted alkyl, alkoxy, alkenyl, or alkenyloxy carrying a hydroxy, alkoxy or halogen substituent; acyl; hydroxy; or halogen.

The compounds are suitable for use as anti-asthmatic pharmaceuticals and processes for making the compounds and compositions containing them are also described.

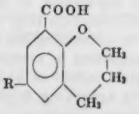
3,804,861

6-SUBSTITUTED-CHROMAN-8-CARBOXYLIC ACIDS

Haldor Christensen, Tastrup, Behrend Friedrich Lundt, Soborg, Frederik Christian Gronvald, Vedbaek and William Andersen, Lyngby, Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Bagsvaerd, Denmark

No Drawing. Continuation-in-part of application Ser. No. 33,864, May 1, 1970. This application Dec. 4, 1972, Ser. No. 311,811
Int. Cl. C07d *7/32*
U.S. Cl. 260—345.2 4 Claims

The invention process novel chroman-8-carboxylic acids of the formula:



in which R is bromine, chlorine, methyl or methoxy.

These carboxylic acids are useful as intermediates in the production of physiologically active compounds. They are particularly useful in the production of antidiabetic benzenesulfonylurea and benzenesulfonylsemicarbazide derivatives.

3,804,862

PROCESS FOR PURIFYING MONOMERIC POLYGLYCIDYL COMPOUNDS

Charles A. Fetscher, Olean and John J. Gapa, Bolivar, N.Y., assignors to The Dexter Corporation, Windsor Locks, Conn.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,737
Int. Cl. C07d *1/18, 1/00*
U.S. Cl. 260—348 R 7 Claims

Monomeric polyglycidyl compounds contaminated with dimers, trimers and ionic materials are readily and simply purified by triturating the impure compounds in a suitable solvent to dissolve the dimers and trimers and thereafter separating the solvent containing the dissolved contaminants to rapidly recover a solid compound which is substantially purely monomeric. The recovered product can be suspended in water and washed free of ionic contaminants more readily than can be a resinous material.

3,804,863

PROCESS FOR THE MANUFACTURE OF 1-BROMO-4-ACYLAMINOANTHRAQUINONES

Eduard Moergeli, Muttenz, and Rudolf Winkler, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 727,052, May 6, 1968. This application June 7, 1971, Ser. No. 150,943
Claims priority, application Switzerland, May 9, 1967, 6,553/67; July 7, 1967, 9,704/67
Int. Cl. C09b *1/36, 1/42*
U.S. Cl. 260—377 9 Claims

A process for the manufacture of 1-bromo - 4 - acylaminoanthraquinones wherein a 1 - acylaminoanthraquinone is brominated inthe presence of water.

3,804,864

NOVEL PROCESS FOR OXIDATION OF SUBSTITUTED PHENOLS USING COMBINATIONS OF TWO METAL SALTS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 879,539, Nov. 24, 1969. This application Dec. 29, 1971, Ser. No. 213,735
Int. Cl. C07c *43/22, 49/64, 49/82, 65/14*
U.S. Cl, 260—396 R 6 Claims

An improved process for the oxidation of 2,6-dialkylphenols which comprises the mixing of the dialkylphenol in the presence of an oxygen containing gas and a catalyst selected from a combination of a noble metal salt and cupric or ferric nitrate in a particular solvent and heating the mixture to yield 2,6-dialkylquinone, diphenoquinone, and an oxidized polyphenoxyether. The noble metal salts which were found to be effective are palladium chloride, palladium acetate, ruthenium chloride, rhodium chloride, and the solvents which were found to be effective are: tertiary hexyl alcohol, tertiary amyl alcohol and methyl isobutyl ketone.

3,804,865

METHOD OF PREPARING SELF-CONDENSATION PRODUCTS OF ALKYLPHENOLS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Filed Mar. 23, 1973, Ser. No. 344,223
Int. Cl. C07c *43/20, 49/64*
U.S. Cl. 260—396 N 17 Claims

An improved method of preparing condensation products, such as diphenoquinones and polyphenoxy ethers,

from alkylphenols is disclosed. The method involves contacting a solution of an alkylphenol, in the presence of a palladium catalyst and an alkaline material selected from the group consisting of alkali metal hydroxides, alkali metal carbonates and alkali metal bicarbonates, with oxygen or an oxygen-containing gas.

3,804,866

OESTROGENICALLY HIGHLY ACTIVE STEROIDS AND A PROCESS FOR THEIR MANUFACTURE

Georg Anner and Jaroslav Kalvoda, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,170
Claims priority, application Switzerland, Apr. 24, 1970, 6,219/70; 6,220/70
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 **3 Claims**

The invention relates to the new 3-cyclopentyl ether of 7α-methyl-3,16α,17α- and 7α-methyl-3,16α,17β-trihydroxy-$\Delta^{1,3,5(10)}$-oestratrienes and their 16,17-diacetates.

Use as oestrogenic agents or as agent for the control of fertility.

3,804,867

PROCESS FOR PRODUCTION OF A PEANUT OIL COMPOSITION BY HYDROGENATION AND WINTERIZATION

Chester M. Gooding, Union and Horace P. Rowley, Ridgewood, N.J., assignors to CPC International Inc.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,719
Int. Cl. C11b *7/00;* **C11c** *3/12*
U.S. Cl. 260—409 **5 Claims**

A peanut oil compositoin comprising peanut oil hydrogenated to an iodine value of from about 78 to 90. This novel hydrogenated peanut oil is pourable at room temperature and exhibits improved stability at high temperatures. This hydrogenated peanut oil composition can be winterized to obtain a high stability liquid peanut oil which exhibits substantially no solids formation at room temperature.

3,804,868

RUTHENIUM COMPLEXES AND PROCESSES FOR THEIR PREPARATION

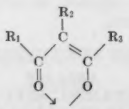
Pierre Chabardes and Louis Colevray, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Original application Dec. 10, 1968, Ser. No. 782,769, now abandoned. Divided and this application Jan. 31, 1972, Ser. No. 222,273
Claims priority, application France, Dec. 11, 1967, 131734
Int. Cl. C07f *15/00*
U.S. Cl. 260—429 J **3 Claims**

The invention provides new ruthenium complexes of the formula:

$$Ru(diket)_2L_n$$

in which (diket) represents a bidentate ligand derived from a β-diketone and has the general formula:



in which R_1, R_2 and R_3 are each alkyl of 1 to 3 carbon atoms, phenyl or naphthyl, or R_2 is hydrogen, or R_1 and R_2 together form a tri- or tetra-methylene chain which is unsubstituted or substituted by alkyl of 1 to 3 carbon atoms or R_1 and R_3 together form a di- or tri-methylene chain which is unsubstituted or substituted by an alkyl group of 1 to 3 carbon atoms and L is a tertiary phosphine ligand, which are useful as catalysts in, for example, isomerizations (such as the REPPE synthesis), hydrogenations, and dimerizations (such as the hydrodimerization of acrylonitrile to adiponitrile).

3,804,869

RUTHENIUM COMPLEXES AND PROCESSES FOR THEIR PREPARATION

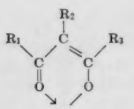
Pierre Chabardes and Louis Colevray, Lyons, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Continuation of abandoned application Ser. No. 782,769, Dec. 10, 1968. This application May 24, 1972, Ser. No. 256,424
Claims priority, application France, Dec. 11, 1967, 131734
Int. Cl. C07f *15/00*
U.S. Cl. 260—429 J **5 Claims**

The invention provides new ruthenium complexes of the formula:

$$Ru(diket)_2L_n$$

in which (diket) represents a bidentate ligand derived from a β-diketone and has the general formula:



in which R_1, R_2 and R_3 are each alkyl of 1 to 3 carbon atoms, phenyl or naphthyl, or R_2 is hydrogen, or R_1 and R_2 together form a tri- or tetra-methylene chain which is unsubstituted or substituted by alkyl of 1 to 3 carbon atoms, or R_1 and R_3 together form a di- or tri-methylene chain which is unsubstituted or substituted by an alkyl group of 1 to 3 carbon atoms and L is a nitrile ligand, which are useful as catalysts in, for example, isomerizations (such as the REPPE synthesis), hydrogenations, and dimerizations (such as the hydrodimerization of acrylonitrile to adiponitrile).

3,804,870

RHODIUM AND IRIDIUM NO-CONTAINING COMPLEXES

William B. Hughes, and Ernest A. Zuech, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Application Sept. 17, 1970, Ser. No. 73,232, now Patent No. 3,721,718, which is a division of application Ser. No. 810,021, Mar. 24, 1969, now Patent No. 3,558,517, dated Jan. 26, 1971, which is a continuation-in-part of application Ser. No. 717,025, Mar. 28, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 696,109, Jan. 8, 1968, now abandoned, which in turn is a continuation-in-part of application Ser. No. 635,688, May 3, 1967, now abandoned. Divided and this application Dec. 20, 1972, Ser. No. 316,918
Int. Cl. C07f *15/00*
U.S. Cl. 260—429 R **19 Claims**

A process for the conversion of olefinic hydrocarbons according to the olefin reaction (e.g., the olefin disproportionation reaction) by contacting the olefinic hydrocarbon with a catalyst comprising a compound of ruthenium, iron, osmium, rhodium, cobalt or iridium complexed with a selected complexing agent (e.g. triphenylphosphine) and combined with an organoaluminum compound (e.g., methylaluminum sesquihalide). A process of preparing rhodium and iridium NO-containing complexes is described. Metal complexes which contain both NO and NO_2 complexing agents are also described.

3,804,871
ENDCAPPED POLYMERIC TIN MERCAPTIDES FOR STABILIZING POLYVINYL CHLORIDE

Bernard Buchholz, Blue Bell, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Jan. 4, 1973, Ser. No. 321,113
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 **14 Claims**

Polyvinyl chloride compositions stabilized against thermal degradation are provided by adding a stabilizing amount of an endcapped polymeric tin mercaptide. The new stabilizers in PVC show improved resistance to early yellowing compared to the corresponding non-endcapped products. The stabilizers are prepared by contacting a cycloaliphatic dimercaptan such as 2,9-p-menthanedithiol or ethylcyclohexyl dimercaptans with an excess of an alkyltin compound such as dibutyltin oxide and then endcapping the compound by contacting it with a mercaptoester such as isooctyl 3-mercaptopropionate.

3,804,872
METHOD FOR PRODUCING TRIALKYL LEAD FLUOROBORATES

John C. Shepard, Jr., Freeport, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation of application Ser. No. 183,228, Sept. 23, 1971, now Patent No. 3,725,447. This application Dec. 20, 1972, Ser. No. 316,779
Int. Cl. C07f 7/24
U.S. Cl. 260—437 R **2 Claims**

A new method for preparing trialkyl lead fluoroborates.

3,804,873
PROCESS FOR MANUFACTURING A LIQUID THIOCARBAMATE

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,794
Int. Cl. C07c 155/06
U.S. Cl. 260—455 A **4 Claims**

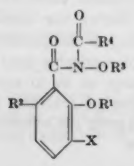
Liquid thiocarbamates are manufactured by a procedure in which the thiocarbamate ester product serves as a reaction promoting solvent in the reaction of a mercaptan with phosgene to produce a chlorothioformate ester, which is then reacted with a secondary or tertiary amine to yield the desired thiocarbamate ester. A portion of the thiocarbamate ester product is recycled to the initial reaction step as a reaction promoting solvent.

3,804,874
O-ACYLATED BENZOHYDROXAMATES

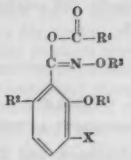
Sidney B. Richter and Eugene F. Barnas, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Original application Oct. 8, 1968, Ser. No. 765,962, now Patent No. 3,649,664, dated Mar. 4, 1972. Divided and this application May 28, 1971, Ser. No. 148,197
Int. Cl. C07c 131/00
U.S. Cl. 260—455 B **3 Claims**

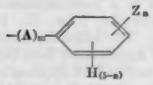
This invention discloses new chemical compounds selected from the group consisting of



and their isomeric form



wherein X is halogen; R^1 and R^3 are alkyl; R^2 is selected from the group consisting of alkyl and alkoxy; R^4 is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio and



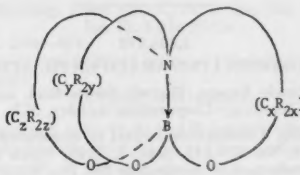
wherein A is selected from the group consisting of oxygen, sulfur and alkylene; Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, cyano and dialkylamino; *m* is an integer from 0 to 1; and *n* is an integer from 0 to 5. The compounds of the above description possess valuable acaricidal properties.

3,804,875
CAGED BORON-NITROGEN COMPOUNDS

Jerome H. Ludwig, Cleveland, and Kenneth J. Witsken, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 707,809, Feb. 23, 1968. This application Dec. 8, 1971, Ser. No. 206,167
Int. Cl. C07f 5/04
U.S. Cl. 26—462 R **4 Claims**

This invention relates to caged boron-nitrogen compounds having the general formula



where *x*, *y* and *z* are, independently, integers from 2 to 4. All of the compounds of this invention contain at least one ring substituent other than hydrogen whereas others have two or more ring substituents. The compounds are useful as antistatic agents in natural and synthetic, polymeric fibers and films, and as color improving agents for fatty acid distillations.

3,804,876
PROCESS FOR THE PREPARATION OF BENZYL CYANIDE

Hans Fernholz, Fischbach, Taunus, and Dieter Freudenberger Diedenbergen, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 17, 1972, Ser. No. 272,546
Claims priority application Germany, July 19, 1971, P 21 35 975.1
Int. Cl. C07c 121/02, 121/08
U.S. Cl. 260—465 R **12 Claims**

The present invention relates to a process for the preparation of benzyl cyanide by reacting a carboxylic acid

ester of benzyl alcohol with hydrocyanic acid in the gaseous phase using metallic salt catalysts on carriers, at an elevated temperature.

3,804,877

2-ANILINOPHENYLACETONITRILES

Alfred Sallman, Bottmingen, and Rudolf Pfister, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Division of application Ser. No. 77,763, Oct. 2, 1970, which is a continuation-in-part of application Ser. No. 861,571, Sept. 29, 1969, now Patent No. 3,558,690, which is a continuation-in-part of applications Ser. No. 625,326, Mar. 23, 1967, and Ser. No. 782,206 and Ser. No. 782,473, both Dec. 9, 1968, all now abandoned, application Ser. No. 782,206 being a continuation-in-part of said application Ser. No. 625,326 and abandoned application Ser. No. 539,829, Apr. 4, 1966. This application Aug. 23, 1972, Ser. No. 283,137

Claims priority, application Switzerland, Apr. 8, 1965, 4,961/65; Feb. 25, 1966, 2,770/66

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 D **8 Claims**

Substituted 2-anilinophenylacetonitriles, 2-anilinobenzyl alcohols and 2-anilinophenylglyoxylic acids are valuable chemical intermediates for the preparation of substituted 2-anilinophenylacetic acids and esters thereof. The 2-anilinophenylacetic acids and -phenylacetates have desirable absorption patterns for protecting the skin against the irritating effects of ultraviolet light and are also anti-inflammatory agents. The 2-anilinophenylacetonitriles are obtained from the 2-anilinobenzyl alcohols through formation of the intermediate 2-anilinobenzyl chlorides. The 2-anilinobenzyl alcohols are obtained from the corresponding N-phenyl anthranilic acid. The 2-anilinophenylglyoxylic acids are obtained from N-phenylanilines.

3,804,878

HYDROGENATED ARALIPHATIC ACIDS

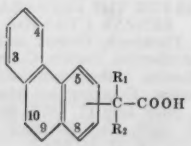
William Laszlo Bencze, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 856,141, Sept. 8, 1969, which is a continuation-in-part of application Ser. No. 806,694, Mar. 12, 1969, now Patent No. 3,709,994, which is a continuation-in-part of abandoned application, Ser. No. 789,078, Jan. 2, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 714,780, Mar. 21, 1968. This application Apr. 17, 1972, Ser. No. 244,911

Int. Cl. C07c *63/44, 69/76*

U.S. Cl. 260—468.5 **7 Claims**

Hydrogenated tricyclic α-aryl-aliphatic acids, e.g. those of the formula



R_1=H or alkyl

R_2=H, alk(en)yl, cycloalk(en)yl or cycloalk(en)yl-alkyl

the dihydro, tetrahydro, hexahydro and functional acid derivatives thereof, are anti-inflammatory agents.

3,804,879

$PGF_{3\alpha}$

Sune Bergstrom and Jan Sjovall, both % Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

No Drawing. Application Feb. 12, 1971, Ser. No. 115,111, now Patent No. 3,706,789, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 119,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. Divided and this application July 3, 1972, Ser. No. 268,439

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D **12 Claims**

The prostaglandin $PGF_{3\alpha}$, and its salts, esters, and alkanates are disclosed. These novel compounds are useful for a variety if pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,804,880

$PGF_{3\beta}$

Sune Bergstrom and Jan Sjovall, both % Kemiska Institutionen, Karslinska Institutet, Stockholm, Sweden

No Drawing. Application Feb. 12, 1971, Ser. No. 115,108, now abandoned, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 199,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. Divided and this application July 3, 1972, Ser. No. 268,442

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D **7 Claims**

The prostaglandin $PGF_{3\beta}$, and its salts, esters, and alkanoates are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,804,881

POLYMERIZATION USING VARYING MONOMER CONCENTRATION

David Robinson Bassett, Charleston, and Kenneth Look Hoy, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 20, 1972, Ser. No. 264,605

Int. Cl. C08f *1/06*

U.S. Cl. 260—470 A **13 Claims**

Polymers are produced by continuously introducing primary polymerizable feed composition from a primary feed source to a polymerization zone, said primary polymerizable feed composition continually varying in compositional content during the continuous introduction; simultaneously adding to the primary feed source a different secondary polymerizable feed composition from a secondary feed source so as to continually change the compositional content of reactants in the primary feed source, and polymerizing the reactants introduced to the polymerization zone.

3,804,882

INTERMEDIATES USEFUL IN THE SYNTHESIS OF VITAMIN A

Marc Julia, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

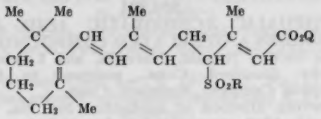
No Drawing. Original application Aug. 4, 1971, Ser. No. 169,114, now Patent No. 3,748,347, dated July 24, 1973. Divided and this application Dec. 29, 1972, Ser. No. 319,878

Claims priority, application France, Aug. 5, 1970, 18906

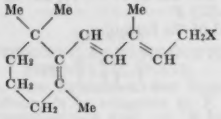
Int. Cl. C07c *149/40*

U.S. Cl. 260—470 2 Claims

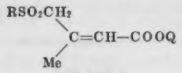
Sulphones of the formula:



in which R is aryl and Q is hydrogen or a hydrocarbon radical, which are made by reacting, preferably at low temperature, a halide of the formula:



and a sulphone of the formula:



are useful intermediates for producing vitamin A into which they may be converted by saponification, desulphonation, and reduction.

3,804,883

1-[2',4' - DISUBSTITUTED - 6' - ω - SUBSTITUTED-HEXYL-1'-PHENYL]-1-OLEFIN-3-ONES

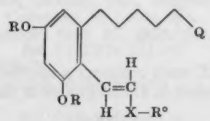
Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 86,270, Nov. 2, 1970. This application Nov. 22, 1971, Ser. No. 201,109

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 R 9 Claims

The invention discloses compounds of the formula:



in which X is —CHOH— or —CO—; Q is $—CH_2OH$, —COOR' or, in certain instances, —CHO or

$$—CH_2OOCR''$$

R° is straight chain lower alkyl (C_4–C_6); and R is hydrogen, alkyl, cycloalkyl or —OCR''; R' is hydrogen (or a substitute salt forming cation) or R''; and R'' is alkyl, as defined or qualified in the following specification, e.g. 1-[2',4'-dimethoxy-6'-ω-hydroxyethyl-1'-phenyl] - 1 - octen-3-one, said compounds being useful as pharmaceutical agents, e.g. as agents for control of reproduction in females. The above final products may be prepared by reacting a 6-ω-substituted-hexyl-2,4-disubstituted - benzaldehyde with a dialkyl-2-oxoalkyl phosphorane in the presence of a base or from certain of the final products by oxidation, esterification or reduction depending on the final product desired. The 6-ω-substituted-hexyl - 2,4-disubstituted-benzaldehydes are obtained by benzylic oxidation of a 4-hydroxymethyl-5-ω-hydroxyhexyl-1,3-disubstituted-benzene which in turn are obtained by reduction of a 6-ω-carboxypentyl-2,4-disubstituted-benzoic acid.

3,804,884

ESTERIFICATION PROCESS AND CATALYST THEREFOR

Gaines Clayton Jeffrey, Houston, and Wallace Eldon Embrey, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 7, 1972, Ser. No. 313,118

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 B 9 Claims

Production of hydroxyalkyl acrylates from an alkylene oxide and acrylic acid is accomplished with improved conversions and yields and virtual elimination of polymer and by-product formation by employing a macroporous anion exchange resin of the styrene-divinyl benzene type having (1) a water swelling capacity of from about 75% to 250% by volume, (2) an ion exchange capacity of about 2 to 4 milliequivalents per gram, and (3) from about 5 to 50% by wt. unsubstituted aromatic rings.

3,804,885

ESTERS OF TRIHALOPIVALIC ACIDS

Charles E. Reineke and Carl L. Gibbons, Midland, Mich., assignors of The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 7, 1972, Ser. No. 216,235

Int. Cl. C07c *69/24*

U.S. Cl. 260—487 7 Claims

Haloalkyl and haloaryl esters of trihalopivalic acids of the formula

$$XCH_2C(CH_2X)_2COOR$$

wherein each X is Cl or Br and R is a haloalkyl or haloaryl group wherein the halogen is Cl or Br are new compounds useful as fire-retardant additives for synthetic plastics. These compounds are exceptionally stable against heat and ultraviolet light and are compatible with a variety of synthetic resins, such as polystyrene, polyvinyl chloride and acrylonitrile-butadienestyrene resins.

3,804,886

TELOMERS OF VINYL ALKANOATES AND ALKANOLS AND PREPARATION THEREOF

Joseph K. Hoffman, Morristown, and James P. Russell, Scotch Plains, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

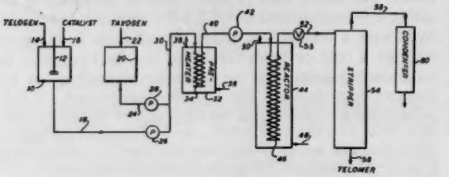
Continuation of abandoned application Ser. No. 386,593, July 31, 1964. This application Dec. 30, 1969, Ser. No. 888,129

Int. Cl. C07c *67/00, 69/16, 69/22*

U.S. Cl. 260—488 J 9 Claims

Telomers of vinyl esters, such as vinyl acetate, wherein the telogen is an alkyl alcohol containing up to 8 carbon atoms, and a method of preparing said telomers by reacting the vinyl ester with the telogen at a temperature of 90° to 250° C. and at a pressure of 50 to 7500 p.s.i. in

the presence of a free-radical-forming catalyst or initiator effective for the polymerization of vinyl acetate, the vinyl



ester and the telogen having a residence time in the reaction of 0.5 to 60 minutes, preferably 1 to 10 minutes.

3,804,887

PROCESS FOR PREPARING VINYL ACETATE

Robert Hoch, Ridgewood, and Richard Victor Porcelli, Yonkers, N.Y., assignors to Halcon International, Inc., New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 83,221, Oct. 22, 1970. This application June 22, 1973, Ser. No. 372,735

Int. Cl. C07c *67/00*

U.S. Cl. 260—491 14 Claims

Process for producing vinyl acetate which comprises subjecting a feedstock consisting essentially of ethylene glycol diacetate to pyrolysis in the vapor phase at a mass velocity in excess of 200 lbs./hr./ft.^{2} of pyrolysis zone cross-sectional area.

3,804,888

2-p-NITROBENZAMIDOACETOHYDROXAMIC ACID

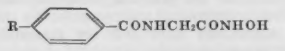
Roland N. Johnson and Jon A. Andersen, Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

No Drawing. Original application May 17, 1971, Ser. No. 144,322, now Patent No. 3,728,380. Divided and this application Sept. 25, 1972, Ser. No. 291,524

Int. Cl. A61k *27/00*; C07c *103/30*

U.S. Cl. 260—500.5 H 1 Claim

Novel benzamidoacetohydroxamic acids of the formula:



wherein R is nitro or chloro are potent inhibitors of urease. Combined with urinary tract antibacterials an improvement in the prevention of formation of urinary calculi in the presence of urea splitting organisms is observed.

3,804,889

15-METHYL- AND 15-ETHYL-15(R)-PGE$_2$

Gordon L. Bundy, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 34,518, May 4, 1970, now Patent No. 3,728,382. This application May 23, 1972, Ser. No. 256,176

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D 3 Claims

Prostaglandin E$_2$-type 15-epimeric compounds with a methyl or an ethyl substituent at C–15. These are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,804,890

15-METHYL AND ETHYL-15(R)-PGF$_{2\alpha}$

Gordon L. Bundy, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 34,518, May 4, 1970, now Patent No. 3,728,382. This application May 24, 1972, Ser. No. 256,397

Int. Cl. C07c *61/32*

U.S. Cl. 260—514 D 3 Claims

Prostaglandin F$_{2\alpha}$-type 15-epimeric compounds with a methyl or an ethyl substituent at C–15. These are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,804,891

BIS-(PHTHALIC ACID)-OXALIC ACID ANHYDRIDES AND RELATED COMPOUNDS

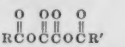
Michael McKay Rauhut, Norwalk, and Laszlo Joseph Bollyky, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Division of application Ser. No. 737,307, June 17, 1968, now abandoned, which is a division of application Ser. No. 485,920, Sept. 8, 1965, now Patent No. 3,399,137, which in turn is a continuation-in-part of application Ser. No. 425,599, now abandoned. Divided and this application May 20, 1971, Ser. No. 145,569

Int. Cl. C07c *63/14, 63/38*

U.S. Cl. 260—515 P 1 Claim

A compound of the formula:



in which R and R′ are each a substituent selected from the group consisting of non-substituted-aryl, arylmethyl, diarylmethyl, triarylmethyl, alkylaryl, alkoxyaryl, sulfoaryl, carboxyaryl, arylaryl, and aryloxaryl substituents, useful in a chemiluminescent composition.

3,804,892

NOVEL 3,5-SUBSTITUTED 2,4,6-TRIIODOBENZOIC ACIDS AND SALTS THEREOF

Bjorn Gustav-Adolf Ingelman, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

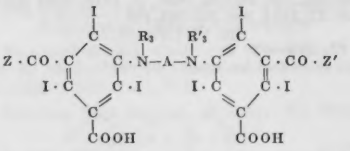
No Drawing. Original application Dec. 26, 1968, Ser. No. 787,214, now Patent No. 3,632,738, dated Jan. 4, 1972. Divided and this application July 21, 1970, Ser. No. 56,979

Claims priority, application Switzerland, Dec. 28, 1967, 17,897/67

Int. Cl. C07c *103/32*

U.S. Cl. 260—519 19 Claims

Compounds of the formula:



wherein Z and Z′ each represent a member selected from the group consisting of amino groups of the formula

$$-NR_1R_2$$

wherein Z and Z′ each represents a member selected from the group consisting of hydrogen and lower alkyl having no more than 5 carbon atoms, and amino groups of the formula

wherein R_1 and R_2 are linked together into a heterocyclic ring system and R_3 and R_3' each represents lower acyl having no more than 5 carbon atoms, and wherein A is an alkylene group substituted by at least one substituent of the formula —O—R_4, wherein R_4 is a member selected from the group consisting of hydrogen, lower alkyl and lower acyl having no more than 5 carbon atoms, said alkylene group containing 3–20 carbon atoms, or physiologically acceptable salts thereof are provided. Such compounds are especially suitable to be used for X-ray visualization of body cavities.

3,804,893
PROCESS FOR THE PREPARATION OF N-ACYLDOPA

Hirofumi Nakano, and Takeo Suzuki, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,499
Claims priority, application Japan, May 4, 1970, 45/37,491
Int. Cl. C07c *101/08*
U.S. Cl. 260—519 **10 Claims**

A process for the preparation of N-acyldopa compounds comprising reacting an N-acyltyrosine with an endiol compound in the presence of ferrous ion and oxygen.

3,804,894
3-[4-(3-HYDROXY-2,4,6-TRIIODOPHENOXY)-PHENYL]ALANINE

Jack Bernstein, New Brunswick, and Francis Alexander Sowinski, Edison, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,276
Int. Cl. C07c *101/72*
U.S. Cl. 260—519 **3 Claims**

The compound 3-[4-(3-hydroxy-2,4,6-triiodophenoxy)-phenyl]alanine, which is useful in radiographic visualization of the subarachnoid space, ventricles of the brain, tracheo-bronchial tree and lymph vessels and compositions thereof are reported.

3,804,895
PREPARATION OF CARBOXY ALKANOIC ACIDS AND ESTERS

Arthur W. Schwab, Peoria, Ill., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,857
Int. Cl. C07c *55/02, 51/24, 69/34*
U.S. Cl. 260—530 R **4 Claims**

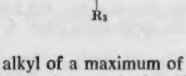
A method is disclosed for preparing carboxy alkanoic acids and esters by catalytic conversion of hydroformylated fatty acids and esters. Yields as high as 95 percent were obtained with a minimum of side reactions.

3,804,896
N,N'-DISUBSTITUTED SULFAMIDES

Cline A. Tincher, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,680
Int. Cl. C07c *161/00*
U.S. Cl. 260—556 N **1 Claim**

The new compounds of the formula



where:

R_1 is hydrogen, alkyl of a maximum of 12 carbon atoms, haloalkyl of a maximum of 12 carbon atoms and a maximum of 3 halogens, cycloalkyl of 3 through 8 carbon atoms, aryl of a maximum of 10 carbon atoms. and phenyl substituted by a maximum of five of the group consisting of halogen, alkyl of a maximum of 6 carbon atoms, haloalkyl of a maximum of 6 carbon atoms and a maximum of 3 halogens, alkoxy of a maximum of 6 carbon atoms, phenoxy, NO_2, and

where R_5 is an alkyl of a maximum of 6 carbon atoms;

Z is oxygen or sulfur;

R_2 and R_3 are each independently selected from alkyl of a maximum of 12 carbon atoms, haloalkyl of a maximum of 12 carbon atoms with a maximum of 3 halogens, alkenyl of a maximum of 12 carbon atoms, cycloalkyl of 3 through 8 carbon atoms, alkylene linked through a hetero oxygen atom (i.e. to form a morpholino moiety), aryl of a maximum of 10 carbon atoms, alkaryl of a maximum of 18 carbon atoms, arylalkyl of a maximum of 18 carbon atoms;

R_4 is aryl of a maximum of 10 carbon atoms, and phenyl substituted by a maximum of five of the group consisting of halogen, alkyl of a maximum of 6 carbon atoms, haloalkyl of a maximum of 6 carbon atoms and a maximum of 3 halogens, alkoxy of a maximum of 6 carbon atoms, phenoxy, NO_2, and

where R_5 is an alkyl of a maximum of 6 carbon atoms;

Y is oxygen or an —NH— group;

n is an integer of 0 or 1 with the provisions that when R_1 is hydrogen or haloalkyl then n is 0.

These compounds are useful as herbicides and as insecticides.

3,804,897
SYNTHESIS OF ACRYLAMIDE FROM ACRYLONITRILE

Louis R. Haefele and Harvey J. Young, Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

No Drawing. Filed July 30, 1971, Ser. No. 167,845
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 N **4 Claims**

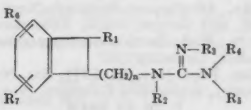
Conversion of acrylonitrile and methacrylonitrile to the respective amides using manganese dioxide as a catalyst with the introduction of oxygen to increase useful catalyst life.

3,804,898
NOVEL BENZCYCLOBUTENE DERIVATIVES

Harm Jan Panneman, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed July 21, 1971, Ser. No. 164,830
Claims priority, application Netherlands, Aug. 7, 1970, 7011683
Int. Cl. C07c *129/00, 133/10*
U.S. Cl. 260—564 A **6 Claims**

The present invention relates to novel benzcyclobutenyl guanidines of the general formula:



in which

n represents a number selected from 0, 1 and 2,

R_1, R_2, R_3 and R_4 represent hydrogen or an alkyl group with 1–6 carbon atoms,

R_5 is hydrogen, and alkyl groups with 1–6 carbon atoms or amino group, and

R_6 and R_7 represent hydrogen, halogen, hydroxy, trifluoromethyl, a lower alkyl or alkoxy group or form jointly or severally an alkylene-dioxy group,

as well as the acid addition salts thereof.

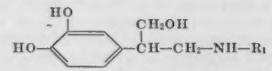
The substances according to the invention exert valuble antihypertensive properties and possess a very low toxicity.

3,804,899
3-ALKYLAMINO-2-(3,4-DIHYDROXYPHENYL) PROPANOLS AND THE SALTS THEREOF

Anton Ebnother, Ariesheim, and Klaus Hasspacher, Riehen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,633
Claims priority, application Switzerland, Sept. 30, 1970, 14,459/70, 14,461/70
Int. Cl. C07c *91/22*
U.S. Cl. 260—570.6 **13 Claims**

The present invention provides new aminopropanol derivatives of the formula:



wherein

R_1 is hydrogen, cycloalkyl of 3 to 7 carbon ototms, alkyl of 1 to 8 carbon atoms, cycloalkylalkyl, in which the cycloalkyl ring is of 3 to 7 carbon atoms and the alkyl residue is of 1 to 6 carbon atoms, or phenylalkyl or diphenylalkyl, in which the phenyl radicals may be substituted in the 3, 4 or 5 position by 1 to 3 hydroxy or methoxy groups, or in the 3,4 position by a methylenedioxy group, and in which the alkyl residue is of 1 to 6 carbon atoms,

and acid addition salts thereof.

Processes for the production thereof and intermediates therefor are also described.

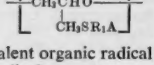
The compounds exhibit broncholytic properties.

3,804,900
POLYETHERS HAVING AMINOTHIOETHER SIDE CHAINS

Richard A. Hickner and Hugh A. Farber, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,946
Int. Cl. C07c *87/20*
U.S. Cl. 260—584 B **13 Claims**

Polyethers having utility as flocculating aids and epoxy curing agents comprise repeating monomer units represented by the general formula:



wherein R_1 is a divalent organic radical and A is an amine or an ammonium radical.

3,804,901
PROCESS FOR THE PRODUCTION OF TERTIARY AMINES

Heinz Noeske, Oberhausen-Sterkrade-Nord, and Hans Feichtinger, and Jurgen Falbe, Dinslaken, Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,475
Claims priority, application Germany, Nov. 20, 1970, P 20 57 001.8
Int. Cl. C07c *85/02*
U.S. Cl. 260—585 B **15 Claims**

A highly pure tertiary amine is obtained by reacting a saturated aliphatic alcohol and ammonia in the presence of a hydrogenation-dehydrogenation catalyst. The catalyst is treated with a tertiary amine before its contact with the alcohol to be converted. The contacted catalyst is then used for the amination reaction in a conventional manner.

3,804,902
PROCESS FOR PRODUCING ACETONE

Kozo Sakakibara, and Kiyoshi Yasuda, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed Nov. 17, 1971, Ser. No. 199,716
Claims priority, application Japan, Nov. 21, 1970, 45/103,046; Dec. 30, 1970, 46/122,246
Int. Cl. C07c *49/08*
U.S. Cl. 260—593 R **8 Claims**

A process for producing acetone by catalytically oxidizing isobutyl aldehyde with an oxygen containing gas in the presence of a catalyst consisting of manganese oxide or manganese oxide and alkali metal hydroxide supported on activated alumina as carrier.

3,804,903
PROCESS FOR PRODUCTION OF METHACROLEIN

Katsuo Hagiwara, Yokohama, Japan, assignor to the Japanese Gun Company, Ltd., Tokyo, Japan

No Drawing. Filed July 31, 1970, Ser. No. 60,084
Int. Cl. C07c *45/04*
U.S. Cl. 260—604 R **6 Claims**

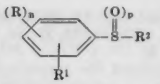
A process for the production of methacrolein which comprises subjecting to a vapor phase catalytic reaction a gaseous mixture containing isobutene and molecular oxygen at an elevated temperature in the presence of catalyst consisting essentially of (1) molybdenum, (2) bismuth, (3) iron, (4) silver and (5) oxygen.

3,804,904
SUBSTITUTED PHENYL SULPHOXIDES AND SULPHONES AND THE USE THEREOF AS VASODILATORS

Kenneth Walter Bentley, Hull, and William Ian Rushworth, Beverley, England, assignors to Reckitt & Colman Products Limited, Hull, England

No Drawing. Filed Nov. 23, 1971, Ser. No. 201,563
Claims priority, application Great Britain, Dec. 7, 1970, 58,065/70, 58,066/70
Int. Cl. C07c *147/14*
U.S. Cl. 260—607 A **7 Claims**

The invention relates to a method of producing peripheral vasodilation which comprise the oral or parenteral administration in unit dosage form of a compound having the formula:



where *n* is 1 or 2, *p* is 1 or 2, R, R^1 and R^2 represent specified radicals. The above compounds are preferably administered together with a pharmaceutically acceptable diluent or carrier therefor, in the form of a pharmaceutical composition.

3,804,905
PHENYL PROPARGYL THIOETHERS

Jay Philip O'Brien, Irvington, and Albert Israel Rachlin, Verona, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application May 28, 1969, Ser. No. 828,731, now Patent No. 3,686,331, which is a division of application Ser. No. 485,904, Sept. 8, 1965, now Patent No. 3,499,805, which in turn is a continuation-in-part of abandoned application Ser. No. 433,209, Feb. 16, 1965. Divided and this application Mar. 6, 1972, Ser. No. 232,244
Int. Cl. C07c *43/20*
U.S. Cl. 260—609 E **8 Claims**

Anti-microbial phenyl 3-halopropargyl thioethers which are prepared by condensing a thiophenol with a 3-halopropyne.

3,804,906

OXIDATION OF ORGANIC COMPOUNDS

James McAvoy, Norton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of application Ser. No. 654,718, July 20, 1967. This application Dec. 8, 1969, Ser. No. 878,980

Claims priority, application Great Britain, July 25, 1966, 33,362/66

Int. Cl. C07c *37/00*

U.S. Cl. 260—621 G 9 Claims

There is provided a process for producing a phenol from an aromatic hydrocarbon by contacting the hydrocarbon in the liquid phase with hydrogen and oxygen in the presence of a compound of a transition metal and a catalyst comprising noble metal of Group VIII of the Periodic Table at temperatures from 10° to 100° C. and at hydrogen/oxygen ratios of 1:100 to 100:1.

3,804,907

ORTHO-NITROPHENOL MANUFACTURE

Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,590

Int. Cl. C07c *79/24*

U.S. Cl. 260—622 R 4 Claims

Method of preparing o-nitrophenol product comprising contacting nitrobenzene with sodium hydroxide in the presence of a catalytic mixture of potassium t-butyl oxide and o-nitrophenol while simultaneously passing an oxygen containing gas therethrough, acidifying the resultant mixture to a pH less than 7 under aqueous conditions and recovering o-nitrophenol product from the acidified mixture. Ortho-nitrophenol is used in the preparation of o-aminophenol which in turn is useful in the preparation of dyes, pharmaceuticals and photographic chemicals.

3,804,908

1,2,3,4,7,7 - HEXACHLORO-2-NORBORNENE AND ALPHA,OMEGA-DICHLOROALKANE TELOMERS FROM OCTACHLOROCYCLOPENTENE AND ETHYLENE

Joseph A. Hudson, Jr., Waco, Tex., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,318

Int. Cl. C07c *19/02, 23/20*

U.S. Cl. 260—648 C 7 Claims

Octachlorocyclopentene and ethylene are reacted in the presence of a free radical initiator such as actinic light, peroxides, and the like, to form 1,2,3,4,7,7-hexachloro-2-norbornene and alpha,omega-dichloroalkane telomers having about 2 to about 8 carbon atoms per molecule.

3,804,909

PROCESS FOR THE MANUFACTURE OF PENTAFLUOROETHYL IODIDE

Hans Millauer, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,941

Claims priority, application Germany, Nov. 2, 1971, P 21 54 512.0

Int. Cl. C07c *17/20, 19/08*

U.S. Cl. 260—653.7 4 Claims

Pentafluoroethyl iodide is prepared by reacting 1,1,2,2-tetrafluoro-diiodoethane or a mixture of tetrafluoroethylene and iodine with hydrogen fluoride in the presence of chlorine.

3,804,910

ISOLATION OF POLYMERIZATION GRADE TETRAFLUOROETHYLENE

Clarence L. Furrow, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 32,735, Apr. 28, 1970. This application Jan. 13, 1972, Ser. No. 217,670

Int. Cl. C07c *21/18*

U.S. Cl. 260—653.3 8 Claims

Tetrafluoroethylene, inhibited for storage or transportation, having a purity of approximately 98 percent is treated by consecutively contacting with sulfuric acid, molecular sieve and pyrophoric copper to produce a tetrafluoroethylene readily polymerizable to a polytetrafluoroethylene of commercial quality. Removal of trace quantities of polymerization inhibiting compounds by passage of treated tetrafluoroethylene through pyrophoric copper produces a tetrafluoroethylene readily polymerizable to commercial quality polytetrafluoroethylene.

3,804,911

METHOD OF DECONTAMINATING HYDROCARBONS USED AS SOLVENTS AND MONOMERS IN PRODUCTION OF SYNTHETIC RUBBER

Alexandr Grigorievich Liakumovich, prospekt Lenina 23, kv. 4; Alexei Dmitrievich Linkov, ulitsa Revoljutsionnaya 7, kv. 8; Grigory Iosifovich Rutman, ulitsa Revoljutsionnaya 7, kv. 6; and Jury Ivanovich Michurov, ulitsa Khudaiberdina 125, kv. 36, all of Sterlitamak U.S.S.R.; Izrail Markovich Belgorodsky, ulitsa Karla Marxa 50, kv. 28; and Efim Moiseevich Sire, ulitsa Karla Marxa 64, kv. 27, both of Tolyatti, U.S.S.R.; and Boris Izrailevich Pantukh, prospekt Oktyabrya 6, kv. 97, Sterlitamak, U.S.S.R.

No Drawing. Filed July 9, 1971, Ser. No. 161,913

Int. Cl. C07c *7/02*

U.S. Cl. 260—666 A 9 Claims

A method of decontaminating hydrocarbons used as solvents and monomers in the production of synthetic rubber by stereospecific polymerization from cyclopentadiene consisting in treating a mixture of said hydrocarbons and cyclopentadiene with cyclic ketones in the presence of a catalyst which is an alkali metal hydroxide or an anion-exchange resin in the [OH^-] form to obtain a fulvene, whereafter the hydrocarbons are distilled off from the mixture thus produced.

The method is simple and permits inexpensive catalysts to be used. The method is effective since it eliminates losses of catalysts and cyclic ketones.

3,804,912

PROCESS FOR THE PREPARATION OF ETHYLIDENE NORBORNENES

Meindert B. Vellinga, Venlo, Frits Hartog, Beek, and Johan P. H. Von Den Hoff, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Nov. 23, 1971, Ser. No. 201,386

Claims priority, application Netherlands, Nov. 26, 1970, 7017274

Int. Cl. C07c *5/24*

U.S. Cl. 260—666 PY 16 Claims

A process for isomerizing vinyl norbornenes into ethylidene norbornenes is disclosed, wherein said isomerization is conducted in the presence of Group II–A and/or Group II–B of the Periodic System oxide catalyst. The catalyst system results in high conversions and catalyst

capacities. The resulting ethylidene norbornenes are known products having known uses, such as, e.g. comonomers with ethylene and propylene for the production of elastomeric copolymers.

3,804,913

PROCESS IMPROVEMENT FOR THE MANUFACTURE OF TRIMETHYL CYCLODODECATRIENE

Charles M. Goodwin, East Windsor, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Oct. 12, 1972, Ser. No. 297,167
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 B **4 Claims**

Improved results are obtained in the oligomerization of isoprene to form trimethyl cyclododecatriene when the reactor is partially vented, after the completion of the formation of the catalyst composition and before onset of appreciable oligomerization. The vented products are mainly those formed by reaction of triethyl aluminum with various impurities in the reactor.

3,804,914

RUTHENIUM(II) COMPLEXES AS CATALYSTS FOR SELECTIVE HYDROGENATION OF CYCLIC POLYENES TO CYCLIC MONOENES

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 256,767, May 25, 1972. This application June 25, 1973, Ser. No. 373,403
Int. Cl. C07c *5/02*
U.S. Cl. 260—666 A **21 Claims**

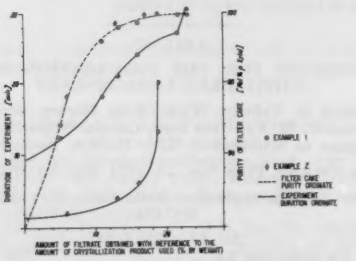
Cyclic polyenes are selectively hydrogenated to cyclic monoenes under suitable hydrogenation conditions in the presence of a ruthenium(II) catalyst complex having the general formula L_nRuX_m wherein L is a ligand, X is a halogen or hydrogen, n equals 2, 3 or 4, m equals 2 or 3, and the sum of $n+m$ equals 4, 5 or 6. A novel process for the preparation of $(Ph_3P)_2(CO)_2RuCl_2$ is also described.

3,804,915

PURIFICATION OF PARAXYLENE

Karl Schmid, Karlheinz Schauerte, Hans Werner Kirchhof, Horst Gelbe, Essen, Hans Georg Tilgner, Mulheim-Saarn, and Richard Wenderoth, Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Continuation of application Ser. No. 136,224, Apr. 21, 1971, which is a continuation of application Ser. No. 787,735, Dec. 30, 1968, both now abandoned. This application July 14, 1972, Ser. No. 271,761
Claims priority, application Germany, Dec. 29, 1967, P 16 43 724.4
Int. Cl. C07c *7/14*
U.S. Cl. 260—674 A **10 Claims**


DURATION OF EXPERIMENT (min)
PURITY OF FILTER CAKE (% by wt)
AMOUNT OF FILTRATE OBTAINED WITH REFERENCE TO THE AMOUNT OF CRYSTALLIZATION PRODUCT USED (% BY WEIGHT)
EXAMPLE 1
EXAMPLE 2
FILTER CAKE PURITY ORDINATE
EXPERIMENT DURATION ORDINATE

High purity p-xylene is crystallized from C_8 aromatic mixtures at a temperature above their eutectic point, and separated p-xylene is purified by passing an inert fluid through the filter cake.

3,804,916

SELECTIVE HYDROGENATION OF ALKYNES OR 1,3-CONJUGATED DIENES

Jean-Marc Lalancette, Sherbrooke, Quebec, Canada, assignor to Ventron Corporation, Beverly, Mass.

No Drawing. Filed Mar. 27, 1973, Ser. No. 345,467
Int. Cl. C07c *7/02*
U.S. Cl. 260—677 H **6 Claims**

An improved process is provided for the selective reduction of alkynes or 1,3-conjugated dienes in admixture with alkenes whereby the alkynes or 1,3-conjugated dienes are substantially selectively reduced to the corresponding alkenes without undue reduction of the alkenes to the alkanes. The improvement comprises carrying out the reduction in the presence of a transition metal catalyst intercalated in graphite wherein the transition metal is in the metallic state having a zero valence. The transition metal is selected from nickel, palladium and platinum.

3,804,917

POLYMERIZATION PROCESS

John W. Shepard, Munster, Ind., and Omar O. Juveland, South Holland, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 434,393, Feb. 23, 1965. This application Oct. 15, 1968, Ser. No. 767,804
Int. Cl. C08f *1/66*
U.S. Cl. 260—683.15 R **2 Claims**

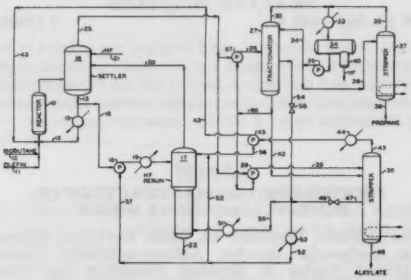
Ethylene, propylene and mixtures thereof are polymerized with a catalyst prepared by distributing a minor amount of a transition metal oxide of Groups V*a* and VI*a* of the Periodic Table upon a major amount of alumina having a surface area within the range of 150 to 500 m.²/gm. and a pore diameter within the range of 100 to 200 A., then reducing the transition metal to an average valence about 1 less than maximum and chloriding the resulting combination with anhydrous hydrogen chloride to a chorine content of about 2 to 5 percent by weight.

3,804,918

LIQUID FLUSHING FOR THE PUMP SEAL IN ALKYLATION

Miles L. Henderson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 2, 1972, Ser. No. 258,992
Int. Cl. B01j *9/14*; C07c *3/54*
U.S. Cl. 260—683.58 **5 Claims**



An HF alkylation process is carried out in a system which includes a reactor, a settler, an acid purification unit, and a product separation unit. Streams containing acid are pumped by pumps which are provided with liquid flush seals. Flush liquid for the pumps is obtained from a zone of the separation unit which is substantially alkylate-free. This prevents formation of acid soluble oils downstream of the pumps.

3,804,919
SYNERGISTIC BLENDS OF MODIFIED POLYOLEFINS AND UNMODIFIED POLYOLEFINS

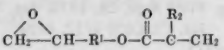
Albert Schrage, East Orange, and Arnold B. Finestone, Woodcliff Lake, N.J., assignors to Dart Industries, Inc. Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 246,000, Apr. 20, 1972, which is a division of application Ser. No. 147,187, May 26, 1971, now Patent No. 3,696,069. This application Dec. 14, 1972, Ser. No. 315,045

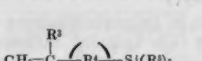
Int. Cl. C08f *29/12, 35/02*

U.S. Cl. 260—827 **9 Claims**

Synergistic effects in certain physical properties have been found in blends of unmodified polyolefins with polyolefins which have been modified by reaction with polymerizable compounds defined by



and/or



in the presence of an organic peroxide. The blends are particularly suitable in application requiring good adhesion to polar surfaces such as metal and glass.

3,804,920
RESIN COMPOSITIONS

Arthur L. Cunningham, Park Forest, John E. Damon, Chicago Heights, and Zenon P. Bohatiuk and John Mathai, Chicago, Ill., and Howard D. Holton, Cleveland, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,339

Int. Cl. C08g *37/34*

U.S. Cl. 260—850 **19 Claims**

The coating resin disclosed herein comprises the reaction product of:

(a) a linear polyester having high chain stiffness, a molecular weight of 1,500–8,000, an aromaticity, as defined hereinafter, of at least 25%, preferably at least 35%, and combined acid and hydroxyl number of 20–52 mg. KOH per gram;

(b) a linear polyester having high chain flexibility characterized by having an aromaticity of less than 20%, preferably 0–5%, a molecular weight of 1,500–8,000, and a combined acid and hydroxyl number of 20–52 mg. KOH per gram;

(c) an aminoplast derived from a diamino or triamino derivative of 1,3,5-triazine and capable of reacting with hydroxy and carboxylic acid groups in components (a) and (b) to produce the thermoset resins; and

(d) an acid catalyst.

The resins of this invention have excellent adhesion, extendability and flexibility, making them particularly suitable for coating metal, particularly where the coatings may be exposed to high stresses, such as in coatings on flat coil stock.

3,804,921
TEREPHTHALIC BASED UNSATURATED POLYESTERS

Saunders E. Jamison, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

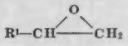
No Drawing. Original application Apr. 13, 1970, Ser. No. 32,497, now Patent No. 3,725,461. Divided and this application Sept. 13, 1972, Ser. No. 288,866

Int. Cl. C08f *21/00*

U.S. Cl. 260—861 **3 Claims**

A process is disclosed for the preparation of terephthalate based unsaturated polyesters by first reacting a mono unsaturated dicarboxylic acid anhydride having from 4–10 carbon atoms with a terephthalic acid glycol ester having the general formula:

wherein R is C_2 to C_6 alkylene to form a glycol ester-mono unsaturated acid adduct and then reacting this adduct with an oxide having the general formula:



wherein R^1 is H or an organic radical having from 1 to 8 carbon atoms. The resulting polyester is useful in preparing protective coatings and plastics when blended with an ethylenically unsaturated monomer and an addition polymerization initiator system.

3,804,922
RUBBERY POLYMERS

Lewis J. Fetters, Akron, Ohio, Rudolf F. Kammereck, State College, Pa., and Maurice Morton, Akron, Ohio, assignors to The University of Akron, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 108,957, Jan. 22, 1971. This application Dec. 29, 1972, Ser. No. 319,446

Int. Cl. C08f *33/08*

U.S. Cl. 260—874 **9 Claims**

Disclosed is a method for the preparation of new and useful triblock copolymers of the ABA type, wherein the B block is a polysulfide and the A block is a polymerizable vinyl-substituted compound. Formation of the B block is accomplished by initiating cyclic sulfides with organolithium compounds at conditions of low temperature, subatmospheric pressure free from active hydrogens and compounds such as water and in a polar solvent. Depending upon the initiator selected, the resulting polysulfide will terminate with either or both ends possessing a carbanion which is capable of initiating polymerization of subsequently added vinyl-substituted compounds to form the A block. Thus either an AB copolymer or an ABA triblock copolymer may be formed.

3,804,923
THERMOSETTING RESIN, MANUFACTURE AND COMPOSITIONS THEREOF

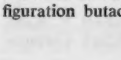
Hisao Suzuki, Fujisawa, and Akira Musashi, and Tomoyuki Inoue, Ichihara, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,436

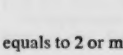
Int. Cl. C08d *5/02;* **C08f** *19/08, 15/16*

U.S. Cl. 260—879 **8 Claims**

A thermosetting resin having parts of polybutadiene or butadiene copolymer wherein butadiene chain units are 50% or more, preferably 80% or more, of 1,2-configuration butadiene chain units, and CXYH groups and



groups wherein X and Y are oxygen atom or sulfur atom and Me is a metal atom of the I group, II group, III group and VIII group in the Periodic and n is valence number of Me; in which weight of the parts of polybutadiene copolymer is more than 70% of the weight of non metallic parts, and total weight of CXY groups is 0.1% to 30%, preferably 1% to 15% of the non metallic parts the numeral ratio of CXYH to



equals to 2 or more.

3,804,924

METHOD OF PREVENTING BUILD-UP IN A POLYMERIZATION REACTOR

Stelvio Papetti and Ping L. Ku, Leominster, Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,970

Int. Cl. C08f *1/11, 19/08*

U.S. Cl. 260—880 R 15 Claims

A method of preventing polymeric coating and build-up on the walls of a polymerization reactor during the graft copolymerization therein in an aqueous medium of an alkenyl aromatic monomer or a mixture of an alkenyl aromatic monomer and one or more other monomers such as nitrile and acrylic monomers onto a rubbery backbone in latex form is presented consisting of conducting the polymerization in the presence of a mixture of a polyalkylene oxide and another polymeric water-soluble organic compound in amounts sufficient to prevent the accumulation of polymer on the exposed surfaces of the reactor and the reactor accessories and to effect the stable suspension of the reaction mixture in the aqueous medium.

3,804,925

ACRYLIC RESINOUS COMPOSITION AND PROCESS THEREFOR FROM A 3 - STAGE EMULSION POLYMERIZATION SYSTEM

Tetsuji Kato, Mikio Izumi, and Kazuhiko Morifuji, Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,832

Claims priority, application Japan, Apr. 3, 1970, 45/28,443; Mar. 18, 1970, 45/22,956; Dec. 28, 1970, 45/120,406

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 260—885 10 Claims

An acrylic resinous composition consisting essentially of fixed proportions of three polymer or copolymer components (A), (B) and (C). Component (A) contains no less than 60% of alkyl acrylate and exhibits a 3–15 swelling degree and a no less than 80% gel content. Components (B) and (C) are prepared by polymerizing a mixture of 10–60% alkyl acrylate and 40–90% alkyl methacrylate in the presence of component (A) and an alkyl acrylate monomer or a mixture containing no less than 60% of alkyl methacrylate in the presence of components (A) and (B), respectively. The resinous composition is suitable for films possessing an attractive appearance and an excellent weather resistance and impact strength.

3,804,926

POLYMERS HAVING IMPROVED EXTRUSION AND COLD-STRETCHING PROPERTIES AND METHOD AND COMPOSITION FOR OBTAINING SUCH POLYMERS

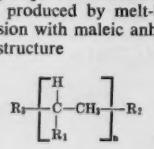
Eckhard C. A. Schwarz, Neenah, and Robert T. Kohl, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

No Drawing. Continuation-in-part of abandoned application Ser. No. 78,624, Oct. 6, 1970. This application May 26, 1972, Ser. No. 257,430

Int. Cl. C08f *41/12*

U.S. Cl. 260—897 A 8 Claims

Polymers having improved extrusion and cold-stretching properties are produced by melt-blending the polymer prior to extrusion with maleic anhydride and a compound having the structure



where

R_1=aromatic radical or substituted aromatic radical having a tertiary hydrogen in the α position to the benzene ring,

R_2=H_1 or alkyl radical,

R_3=H_1, aromatic or alkyl radical,

n=1–10,000.

3,804,927

REACTION OF CHLOROPHOSPHAZENES (PHOSPHONITRILIC CHLORIDES) AND CYCLIC ETHERS

David Francis Lawson and James M. Willis, Akron, and Gary Stephen Kyker, Uniontown, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

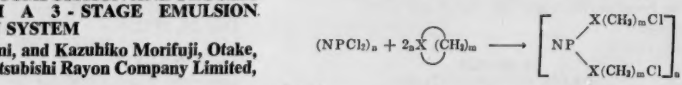
No Drawing. Filed Sept. 20, 1972, Ser. No. 290,587

Int. Cl. C07f *9/22, 9/24*

U.S. Cl. 260—977 4 Claims

The reaction of chlorophosphazenes with all types of reactive ethers (e.g. epoxides, oxetanes, oxanes, episulfides, etc.) is effected more efficiently by the use of soluble salts as the reaction catalysts, lithium halides being particularly preferred as catalysts.

The reaction may be represented as follows:



wherein

n is an integer greater than 2,

m is an integer from 2 up to 5,

X represents oxygen or sulfur.

3,804,928

METHOD FOR PREPARING MASSIVE NITRIDES

Ji Young Chang, Murrysville, Pa., and William M. Ewing, Oak Ridge, William Fulkerson, Clinton, and David L. McElroy and Samuel C. Weaver, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,686

Int. Cl. C09g *56/00*

U.S. Cl. 264—0.5 2 Claims

Actinide nitride and other metal nitride structures of relatively large mass are prepared by confining a metal body in a nitrogen atmosphere and then subjecting the body to a moving-zone melting operation. The metal nitride resulting from the reaction between the molten metal and the nitrogen is of essentially stoichiometric composition and of essentially theoretical density.

3,804,929

METHOD OF ACTIVATING AMMONIUM NITRATE PRILLS FOR EXPLOSIVES

Gerald L. Hurst, Dallas, Tex., assignor to Kinetics International Corporation, Dallas, Tex.

Original application Oct. 8, 1970, Ser. No. 79,096, now Patent No. 3,722,410. Divided and this application Dec. 7, 1972, Ser. No. 312,832

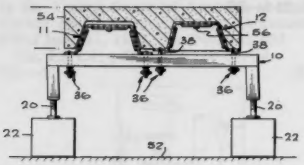
Int. Cl. C06b *21/02*

U.S. Cl. 264—3 C 21 Claims

Ammonium nitrate prills are activated by adding a small amount of water to the prills, thoroughly mixing the water so that it is all absorbed, heating the prills to an elevated temperature, evaporating the water from the

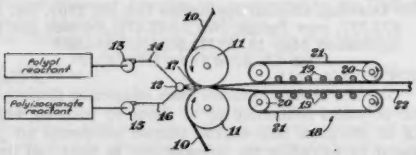
prills, and then preferably cooling the prills. An economical and effective explosive composition is manufactured by combining appropriate proportions of the activated ammonium nitrate prills, a fuel and preferably a sensitizer. The preferred fuel is a liquid hydrocarbon derivative which is soluble in the sensitizer and which has a fuel value greater than that of the sensitizer. The preferred sensitizers are nitroalkane, or dinitroaromatic compounds most preferably nitromethane.

3,804,930
METHOD FOR REMOVING FORM APPARATUS FROM CAST CONCRETE
Stephen S. Dashew, Palos Verdes Estates, Calif., assignor to La Mesa Industries, Inc., Compton, Calif.
Filed Jan. 19, 1972, Ser. No. 219,060
Int. Cl. E04b *1/16*
U.S. Cl. 264—33 **3 Claims**



Method for forming concrete buildings that have numerous identical portions, which minimizes the set-up time for a group of forms, by permitting the forms to be individually released from set concrete while constantly maintaining the positions of the forms on a subform. The method includes the use of several forms with flanges that rest on a subform, several bolts for each form that project through flanges of the forms and through holes in the subform, and a spring for each bolt to urge its lower end downwardly with respect to the subform. After concrete is poured on the forms and partially sets, the subform is lowered a few inches even though the forms may remain stuck in the concrete, and then each form is individually freed from the concrete. As each form is freed, the bolts guide it down to its original position on the subform. The subform and forms then can be moved as a unit to a new location in the building where another identical concrete portion is to be formed.

3,804,931
PROCESS FOR THE PREPARATION OF THIN POLYURETHANE FOAMS AND LAMINATES
Gordon R. Miller, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of abandoned application Ser. No. 99,822, Dec. 21, 1970. This application June 5, 1972, Ser. No. 259,837
Int. Cl. B29c *5/10*
U.S. Cl. 264—47 **16 Claims**



Polyurethane foams and foam laminates are rapidly prepared by applying a reaction mixture comprising a polyol and a polyisocyanate to the interface formed by a pair of substrates as they pass between a pair of rolls, adjusting the pressure between said rolls such that a fillet of said reaction mixture is formed and thereafter passing the substrates containing a foaming mass therebetween through a sizing device.

3,804,932
PROCESS FOR PREPARING SEMIPERMEABLE MEMBRANES
Kiyoshi Ishii, Katumi Kojima, and Kazuo Ishikawa, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan
No Drawing. Filed July 13, 1972, Ser. No. 271,298
Claims priority, application Japan, July 28, 1971, 46/56,540
Int. Cl. B29c *5/00*
U.S. Cl. 264—49 **2 Claims**

Semipermeable membranes for use in reverse osmosis or ultrafiltration are prepared by cast molding a cast molding solution comprising cellulose acetate, a swelling agent and a composite solvent comprising acetone as a first component and a material selected from the group consisting of 1,4-dioxane, 1,3-dioxolane, dimethyl formamide and 2-methoxyethyl acetate as a second component. The solution is cast molded at ambient temperature.

3,804,933
CHEMICAL EMBOSSING
John L. H. Allan, Easton, and Nathan D. Field, Allentown, Pa., assignors to GAF Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 833,187, June 13, 1969. This application Feb. 4, 1972, Ser. No. 223,744
Int. Cl. B29h *7/20*
U.S. Cl. 264—52 **10 Claims**

An improved process for the chemical embossing of a thermoplastic sheet comprising blending:

(1) A vinyl resin, e.g. polyvinyl chloride,

(2) A plasticizer for the vinyl resin,

(3) A blowing agent which decomposes when heated at a temperature in the range above the glass transition temperature of the plasticized vinyl resin and below the decomposition temperature of the resin,

(4) A monomer containing at least two olefinically unsaturated sites and capable of polymerization at elevated temperatures in the presence of an addition polymerization catalyst; and

(5) A monomer containing one olefinically unsaturated site and capable of polymerization at elevated temperatures in the presence of an addition polymerization catalyst.

Such a blended composition is formed into a sheet and to such sheet is applied, in a pre-determined pattern, a composition comprising

(a) A catalyst that will cause polymerization of the monomers and, optionally,

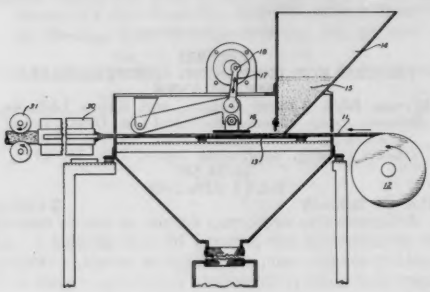
(b) A liquid that will penetrate the sheet.

The foaming of the sheet and creation of the embossed effect is accomplished by heating the resulting sheet to a temperature sufficient to fuse the plasticized resin, polymerize the monomer and decompose the blowing agent. The utilization of the monomer containing one olefinically unsaturated site allows for the production of an embossed effect through the utilization of less of the expensive monomer containing at least two olefinically unsaturated sites.

3,804,934
METHOD FOR MAKING FILTER CARTRIDGES
Harry Ball, 116 Wyckoff Ave., Piscataway, N.J. 08854
Filed June 1, 1972, Ser. No. 258,782
Int. Cl. B29f *5/00*
U.S. Cl. 264—70 **4 Claims**

An apparatus and method for making filter cartridges wherein dry, thermo-setting resins are dispersed through-

out a fibrous mass by being deposited thereon, beat into it until they are substantially dispersed throughout the

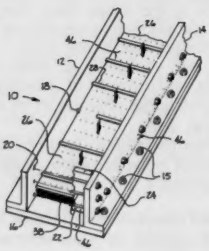


interstices of the fibrous mass, and then they are thermoset by heat.

3,804,935
PROCESS FOR MAKING A PARTICLE BOARD

Edward Potter, Beaverton, Irving W. Potter, Salem, and Robert M. Smyth, Lake Oswego, Oreg., assignors to Dant & Russell, Inc., Portland, Oreg., and Edward Potter, Beaverton, Oreg., fractional part interest to each

Filed Oct. 16, 1972, Ser. No. 297,999
Int. Cl. B29j *5/02*
Int. Cl. 264—122 **12 Claims**

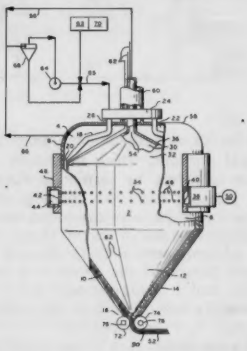


A particle board manufactured from the wood waste of sawmills, such waste preferably comprising cedar or redwood bark, sawdust and shavings. The product may also be made from certain non-wood fibrous vegetable materials, such as bagasse. The particle board is prepared by mixing dried sawmill waste or other fibrous material of substantially uniform particle size with phenolic resin and wax in predetermined proportions, and placing a measured amount of the resultant mixture in an elongate mold where it is bonded together under the influence of heat and pressure. The mold includes a moveable pressure plate forming the top of an enclosure within which the material is compressed to a predetermined thickness by pressure applied to the exterior of the plate. The thickness of the compressed mixture is substantial, so as to enable continuous solid pieces of the processed material later to be cut to standard dimension lumber sizes. After the material in the mold has been compressed to the predetermined thickness, fasteners are attached for retaining the pressure plate in its compressed position. Thereafter the mold is taken from the press and transferred to an oven where its contents, still under pressure from the retained pressure plate, are baked and cured for an extended period of time and then allowed to cool. The resultant thick bonded material has sufficient strength and other characteristics to make it suitable for use as a substitute for lumber studs and certain other types of dimension lumber.

3,804,936
PROCESS FOR FORMING A NON-WOVEN, FIBER WEB

Raymond G. Voss and Ray D. Ramsay, both % Phillips Petroleum Company, Bartlesville, Okla. 74003

Original application Mar. 9, 1970, Ser. No. 17,397, now Patent No. 3,647,597, Mar. 7, 1972. Divided and this application Sept. 29, 1971, Ser. No. 184,790
Int. Cl. D04h *11/00*
U.S. Cl. 264—93 **9 Claims**



A process for laying down fibers in a cylindrical or modified cylindrical shape for forming a non-woven fiber web having an opened, longitudinally extending central portion. Said apparatus has a rotating fiber conduit for helically placing layers of the fibers between two forming elements and means for entangling the positioned fibers.

3,804,937
PROCESS FOR PRODUCING AN OPAQUE INORGANIC-ORGANO TITANATE POLYMERIC FILM

Horton H. Morris and Paul I. Prescott, Macon, Ga., assignors to Freeport Minerals Company, New York, N.Y.

No Drawing. Original application Oct. 30, 1969, Ser. No. 872,757, now Patent. No. 3,697,475. Divided and this application May 18, 1972, Ser. No. 254,803
Int. Cl. B29d *7/24;* **D01f** *1/02*
U.S. Cl. 264—211 **3 Claims**

Oriented opaque ultrathin films comprising thermoplastic polymers containing up to about 60 parts by weight of an inorganic filler-organo titanate compound are prepared by extruding the compositions as films and thereafter drawing the resultant films at a temperature below that at which the films remain translucent. The films of our invention are useful as packaging material in preparing ultrathin paper, and in laminates, non-woven fabric, rug backing and mesh structures.

3,804,938

HAZE INHIBITION IN CONTAINERS FABRICATED FROM NITRILE POLYMERS

Cheh-Jen Su, Alsip, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed June 7, 1972, Ser. No. 260,642
Int. Cl. B29c *25/00*
U.S. Cl. 264—232 13 Claims

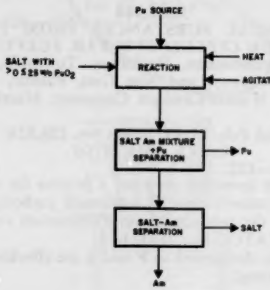
Changes in the optical clarity of nitrile polymer containers exposed to aqueous media at elevated temperatures are inhibited by incorporating a polyhydric alcohol in the aqueous media.

3,804,939

METHOD OF PRECIPITATING AMERICIUM OXIDE FROM A MIXTURE OF AMERICIUM AND PLUTONIUM METALS IN A FUSED SALT BATH CONTAINING PuO_2

William R. Strickland, Kearny, Ariz., and Robert G. Auge, Boulder, and James C. Brown, Broomfield, Colo., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed June 21, 1972, Ser. No. 265,055
Int. Cl. C01g *56/00;* C22b *61/04*
U.S. Cl. 423—5 4 Claims



Method of recovering americium from plutonium metal source material which contains americium comprising contacting molten plutonium metal source material with an about eual weight of molten equimolar salt mixture of sodium chloride and potassium chloride containing not greater than about 25 weight percent (w/o) plutonium oxide as reductant to convert the americium to americium oxide, thereafter separating the salt mixture containing the americium oxide from the plutonium and subsequently separating americium from the salt mixture.

3,804,940

METHOD OF SEPARATING THORIUM FROM YTTRIUM AND LANTHANIDE RARE EARTHS

George W. Mason, Clarendon Hills, Sonia Lewey, Joliet, and Donald F. Peppard, Oak Park, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 26, 1972, Ser. No. 301,035
Int. Cl. B01d *11/00;* C01g *56/00*
U.S. Cl. 423—10 10 Claims

Thorium values are separated from yttrium and from the lanthanide rare earth values contained in an aqueous hydrochloric acid solution with an organic extractant of di(2-ethylhexyl) phosphoric acid in 2-ethylhexanoic acid which preferentially extracts the thorium values while the yttrium and lanthanide rare earth values remain in the aqueous solution. The thorium values are recovered by contacting the thorium-loaded extractant with a 4.0 to 8.0 M hydrochloric acid solution.

3,804,941

PROCESS FOR THE EXTRACTION OF TUNGSTEN FROM AN AQUEOUS ALKALINE SOLUTION

Peter Coad, Midwest City, and John Arthur Hill, Edmond, Okla., assignors to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,909
Int. Cl. C01g *41/00*
U.S. Cl. 423—54 10 Claims

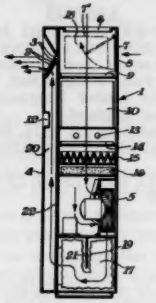
The present invention comprises a solvent extraction process for the recovery of tungsten from an aqueous alkaline solution. The solution is sulfidized to convert the tungsten therein to a thiotungstate species and subsequently contacted with an organic phase comprising an extractant in an organic diluent, whereby the thiotungstate forms a complex with the extractant in the organic phase. The organic phase containing the thiotungstate complex is recovered and hydrolyzed to convert the thiotungstate complex to a tungstate complex whereby the tungsten is readily recoverable using known techniques.

3,804,942

AIR PURIFIER

Takashi Kato, Machida, Isao Takahashi, Hanno, Kojiro Wakamatsu, Fujisawa, and Yashuhiko Shimizu, Tokyo, Japan, assignors to Shimizu Kensetsu Kabushiki Kaisha and Toyo Kuki Chowa Kabushiki Kaisha Tokyo, Japan

Filed Oct. 26, 1972, Ser. No. 301,152
Claims priority, application Japan, Nov. 16, 1971, 46/91,137
Int. Cl. B01d *50/00, 53/04;* B03c *3/01*
U.S. Cl. 423—239 10 Claims



An air purifier includes structure for eliminating various forms of dust, fumes, mist, microbes, gas and odor from polluted air by passing the polluted air through a succession of different filters arranged within a casing. A prefilter removes coarse dust while an electrostatic dust collector removes fine dust whereby all the pollutants from virus to coarse dust are physically eliminated leaving only harmful chemical gases. An ion-exchange resin filter or an oxidization catalyst filter change the remaining gases into stable salts or into a form easily adsorbable on active carbon. Activated carbon may be used as the final filter.

3,804,943

METHOD OF REMOVING UNSATURATED OR AROMATIC HYDROCARBONS FROM GASES

Myron J. Block, 4 Cliff St., Nahant, Mass. 01908

Continuation-in-part of abandoned application Ser. No. 156,296, June 24, 1971. This application Nov. 15, 1971, Ser. No. 198,774
Int. Cl. B01d *35/16, 53/34*
U.S. Cl. 423—245 6 Claims

A gas filter, particularly adapted for engine exhausts or for air-conditioning intakes in which there is a first gas-porous bat of fibers to effect mechanical filtering of

particulate matter, and a second gas-porous bat of fibers, strips, powder or the like formed from a polymer of a perhalogenated sulfonated alkene such as perfluoroethylene sulfonic acid to effect removal by reaction with unsaturated and aromatic hydrocarbons in the effluent from the mechanical filter.

3,804,944

SODIUM DITHIONITE SOLUTION STABLIZATION

Mearl A. Kise, Portsmouth, and Leonard C. Ellis, Chesapeake, Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

No Drawing. Continuation of abandoned application Ser. No. 77,730, Oct. 2, 1970. This application May 22, 1972, Ser. No. 255,769

Int. Cl. C01b *17/66*

U.S. Cl. 423—265 **5 Claims**

Sodium dithionite in solution is widely used in bleaching and vat dyeing of textiles. Unfortunately, however, losses occur not only through decomposition during dissolving of the salt in question, but also during storage of the solution. In the present method and reaction product, one avoids decomposition and effectively stabilizes various concentration levels of the dithionite solution with caustic soda added at 1.4% to 20% by weight of the sodium dithionite present, the addition being made under controlled conditions. For example, while minimizing air exposure, the pH is generally maintained above 9 and excessive caustic soda addition is avoided. Also, temperature is controlled (to approximately 50° F.) for best effect.

3,804,945

PROCESSES FOR EXTRACTING METAL VALUES FROM SOLUTIONS

Kenneth Thomas Bartlett Scott, Reading, and John Herbert Grimes and Peter William Ball, Basingstoke, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed May 20, 1971, Ser. No. 145,504

Claims priority, application Great Britain, May 27, 1970, 25,600/70

Int. Cl. B01d *15/00, 15/08*

U.S. Cl. 423—658.5 **11 Claims**

A solution of a metal or metals is contacted with entities, e.g. in a column, of a hydrous metal-containing gel (made by mixing a salt solution or sol of the metal with a soluble polymer and contacting the mixture with a precipitant to precipitate the metal of the solution or sol as an insoluble compound) which sorbs one or more of the metals from the solution. The entities are subsequently contacted with a liquid which desorbs the metal from the entities, suitably a liquid which dissolves the sorbed metal. The hydrous metal-containing gel suitably contains the metal as an oxide, e.g. a ferric oxide gel. The process can be regarded as somewhat analogous to chromatographic adsorption. In addition to extraction, the process can effect separation, concentration and purification.

3,804,946

DENTIFRICES CONTAINING CRYSTALLINE SILICA

Michael Harrison, Newcastle upon Tyne, and Kenneth Tomlinson, Bramhall, England, assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 217,645, Jan. 3, 1972, which is a continuation of application Ser. No. 57,326, July 22, 1970, both now abandoned. This application Feb. 26, 1973, Ser. No. 335,787

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **13 Claims**

Dentifrice containing as vehicular material a polishing agent of water-insoluble crystalline silica having particles of a size up to about 5 microns, a mean particle size up to about 1.1 microns and a surface area of up to about 50,000 $cm.^2/gm.$ The silica is homogeneously distributed throughout the dentifrice and is in contact with the components of the dentifrice. The silica polishing agent is desirably used with cationic prophylactic agents, such as 1,6-di-(p-chlorophenyl biguanidohexane).

3,804,947

ISOPROPYLIDENE AZASTREPTONIGRIN AND STREPTONIGRIN-MONOXIME

Koppaka V. Rao, Pine Brook, N.J., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 204,874, dated June 25, 1962. This application June 15, 1964, Ser. No. 376,296

Int. Cl. A61k *27/00*

U.S. Cl. 424—119 **2 Claims**

Novel derivatives of streptonigrin are prepared, particularly the monoxime and isopropylideneazastreptonigrin and their esters and salts. (Streptonigrin is known chemically as 5 - amino -6 - (6 - methoxy-5,8-dihydro-7-amino-5,8-dioxo-2-quinoyl) - 4 - (2 - hydroxy - 3,4 - dimethoxyphenyl)-3-methyl-picolinic acid.)

3,804,948

ANTIFUNGAL SUBSTANCES FROM *POLYANGIUM CELLULOSUM* VAR. *FULVUM*

Max von Strandtmann, Rockaway Township, Samuel Ringel, Rockaway, and Ann Gutt, Passaic, N.J., assignors to Warner-Lambert Company, Morris Plains, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,524

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **4 Claims**

The present invention discloses a process for the isolation and characterization of antifungal carboxylic acids produced by the microorganism *Polyangium cellulosum* var. *fulvum* (ATCC No. 25532).

These acids, designated as F and S are effective against a variety of fungi.

3,804,949

PROCESS OF PROMOTING HEALING OF WOUNDS

Leslie L. Balassa, Blooming Grove, N.Y. assignor to Lescarden Ltd., Goshen, N.Y.

No Drawing. Original application Feb. 12, 1968, Ser. No. 704,540, now Patent No. 3,624,201. Divided and this application Dec. 24, 1970, Ser. No. 101,418

The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed

Int. Cl. A61k *27/00*

U.S. Cl. 424—128 **3 Claims**

Wound healing compositions comprising a calcium phosphate or magnesium phosphate, and mixtures of the foregoing with chitin are described as well as methods of promoting healing of wounds.

3,804,950

PHENYLPHOSPHONIUM SALTS FOR TREATING HYPERACIDITY OR ULCERATION

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Washington, Pa.

No Drawing. Original application Jan. 22, 1972, Ser. No. 109,020, now Patent No. 3,755,459. Divided and this application Jan. 8, 1973, Ser. No. 321,509

Int. Cl. A61k *27/00*

U.S. Cl. 424—198 **8 Claims**

Phenylphosphonium salts of this invention possess useful gastric antisecretory, spasmolytic and antiulcerogenic properties. A method of treating gastrointestinal hyperacidity and ulceration has also been disclosed.

3,804,951

EGG EXTENDER COMPOSITION AND PROCESS THEREFOR

Harold Rapp, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,907

Int. Cl. A23j *3/02*; A23l *1/04*

U.S. Cl. 426—167 3 Claims

An egg extender composition which can be added to eggs for use in baking comprises the interrupted aqueous gel product containing kappa carrageenan, xanthan gum, locust gum and potassium salt. This product can be produced by rapidly cooling with agitation through a temperature range at which gelation will take place an aqueous mixture of the above constituents.

3,804,952

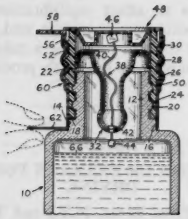
DISPENSING PACKAGE FOR FEEDING OF INFANTS

William G. MacDonald, 4538 Greystone Ave., Bronx, N.Y. 10471

Filed May 22, 1972, Ser. No. 255,418

Int. Cl. A61j *9/00*

U.S. Cl. 426—117 1 Claim



Package of disposable type consisting of a container, filled with a nursing liquid, and a combined closure and nursing attachment secured to the container to seal the contents during shipment, sale and storage and having readily removable means providing access to a nipple forming a part of the attachment. Attachment includes a tubular body forming an extension of the neck of the container, the nipple is secured inside tubular body in an inside-out disposition and nipple is enclosed by readily removable cap. Nipple has nursing opening closed by sealing device which user pulls out to reverse nipple into operative position and to unseal nursing opening. Attachment is made as a subassembly adapted for application to filled containers by conventional capping machines of various types.

3,804,953

FLAVORING MATERIALS AND METHOD OF PREPARING THE SAME

Alan P. Bentz, Stamford, Conn., and Richard Scarpellino, Ramsey, N.J., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Mar. 5, 1970, Ser. No. 16,935

Int. Cl. A23l *1/26*

U.S. Cl. 426—221 10 Claims

Food flavoring materials are prepared by reacting hydrogen sulfide with carbonyl compounds in a dilute aqueous medium. The flavoring materials are stable in the aqueous medium and retain their high potency and quality when combined with an edible fixation agent and are dehydrated.

3,804,954

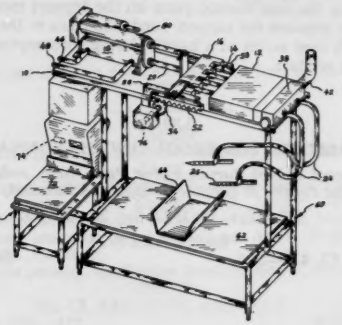
METHOD FOR DISPENSING MEASURED QUANTITIES OF LIQUID INTO A FOOD ITEM

Leroy Clardy, Naperville, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Apr. 14, 1972, Ser. No. 244,000

Int. Cl. A22c *18/00*

U.S. Cl. 426—230 3 Claims



Specific quantities of liquid additive material for injection into a food item are delivered by filling a metering means only with an amount of such material measured as a percentage of the weight of the item, and the entire quantity is emptied from said metering means to said item.

3,804,955

AN AUTOMATED METHOD FOR PREPARING PACKAGED SKEWERED MEAT PRODUCTS

Philip Y. Chow, 3 Harran Circle, Orinda, Calif. 94563

Original application Sept. 15, 1971, Ser. No. 180,670. Divided and this application Oct. 2, 1972, Ser. No. 293,836

Int. Cl. A22c *18/00*

U.S. Cl. 426—302 3 Claims

The food is sliced into strips and disposed between a pair of corrugated platens. The platens, when closed, have registering guide slots through their complementary corrugated faces for receiving a skewer. The skewer is inserted through the openings and a food strip between the platens while a blade cuts the next food strip. The skewered food is picked up and conveyed through a

sauce bath, a dryer, an oil bath and through an oven. From the oven, the individual skewered food products are grouped and packaged with a prepackaged sauce container.

3,804,956

METHOD OF PREPARATION OF PIZZA PRODUCT

Nicholas J. Bongiovanni, Crystal, Minn., assignor to Wopo's Italian Frozen Food Products, Inc., Crystal, Minn.

Filed May 8, 1972, Ser. No. 251,153

Int. Cl. A21d *13/08*

U.S. Cl. 426—344 **4 Claims**

A pizza product is prepared by wrapping a sauce covered pizza dough about a wooden support means and baking the thus formed pizza on the support means. The sauce adjacent the support bonds the pizza to the support which then serves as a handle during consumption of the pizza product.

3,804,957

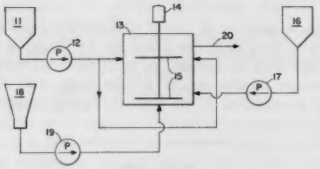
METHOD FOR PRODUCING MAYONNAISE

Edward Robert Purves, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 10, 1972, Ser. No. 225,132

Int. Cl. A23l *1/24*

U.S. Cl. 426—363 **15 Claims**



A method of producing a highly stable, nonpourable mayonnaise or mayonnaise-like salad dressing with or without premixing, which comprises simultaneously introducing vegetable oil, water, an egg yolk containing ingredient, and acid into a single mixing chamber, mixing the ingredients by means of a high speed impeller to impart high shear forces and to provide a stable emulsion, and continuously removing the finished product from the mixing zone.

3,804,958

PROCESS FOR MAKING PORK SAUSAGE

Alonzo Theodore Adams, Raleigh, N.C., assignor to Goodmark, Inc., Raleigh, N.C.

No Drawing. Filed Jan. 27, 1972, Ser. No. 221,449

Int. Cl. A22c *11/00*

U.S. Cl. 426—371 **5 Claims**

Process of making pork sausage having a relatively high degree of uniformity of fat content from hog carcasses having a wide range of fat contents, without the necessity for measuring the fat content of the carcasses, in which the hog carcasses are trimmed of all surface fat trimmings, which are separated and collected in one area, and the remaining lean meat trimmings are separated from the bones and collected in a second area, the surface fat trimmings and the lean meat trimmings then being combined in a predetermined ratio, which may be determined independently of the measured fat content of a particular carcass or a particular group of carcasses. Desirably, prior to stripping of fat from the carcasses, a multiplicity of carcasses are arranged to provide a relatively uniform distribution of light and heavy carcasses. The sausage made pursuant to this process may have regularly incorporated therein a substantial amount of hog jowl.

3,804,959

METHOD FOR REHYDRATING DRIED FOODSTUFFS

William H. Stevenson III, Winston-Salem, N.C., assignor to Ocean Trove Development Corp., Washington, D.C.

Filed June 8, 1971, Ser. No. 151,062

Int. Cl. A22c *29/00;* **A23l** *1/33*

U.S. Cl. 426—376 **21 Claims**

Dried foodstuffs, particularly dried shrimp, are rehydrated by maintaining the foodstuff immersed in an aqueous liquid rehydration medium while passing the same through a rehydration zone to saturate the foodstuff with the aqueous liquid, recovering the saturated foodstuff from the liquid, and then maintaining the foodstuff under controlled conditions to effect equilibration. The method lends itself to continuous operation and, particularly in the case of dried shrimp, provides a rehydrated product organoleptically similar to the fresh product.

3,804,960

PREPARATION OF EXTRACT FOR FREEZE DRYING

Stanley Barnett, Pearl River, N.Y., and Tyrone T. Mak, Stamford, Conn., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Sept. 26, 1968, Ser. No. 762,993

Int. Cl. A23j *1/08*

U.S. Cl. 426—384 **5 Claims**

An extract is prepared for freeze drying by concentrating the extract to a solids content of at least 35% by weight of the extract, partially slush freezing the extract, foaming the partially slushed extract and freezing the slushed and foamed extract prior to freeze drying. It has been found that product quality and uniformity are improved by partially slushing prior to foaming.

3,804,961

PACKAGING TOMATOES IN CARBON DIOXIDE PERMEABLE FILM

Alfred S. Cummin, Westfield, Henryk Daun, New Brunswick, and Seymour G. Gilbert, and Yair Henig, Piscataway, N.J., assignors to Borden, Inc., Columbus, Ohio

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,237

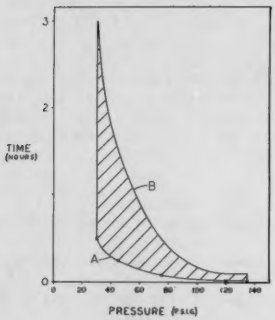
Int. Cl. B65b *25/04*

U.S. Cl. 426—415 **8 Claims**

The ripening time of tomatoes can be prolonged and the period of time they remain ripe can be extended if the tomatoes are separated as to their degree of ripeness and packaged in a film which is at least three times as

permeable to carbon dioxide as to oxygen and has a permeability to oxygen and carbon dioxide specifically selected for the degree of ripeness of the tomatoes. Green tomatoes are packaged in films having an oxygen permeability of about 1,000 to about 3,000 and a carbon dioxide permeability of about 5,000 to about 20,000. Pink tomatoes are packaged in film having an oxygen permeability of from about 200 to about 3,000 and a carbon dioxide permeability of from about 1,500 to about 20,000. Red ripe tomatoes are packaged in films having an oxygen permeability of from about 50 to about 3,000 and a carbon dioxide permeability of from about 500 to about 20,000.

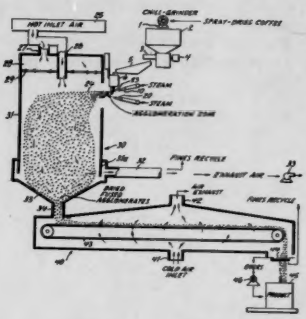
3,804,962
MEAT TREATING METHOD
David D. Pipkins, 4017 Elm St., Downers Grove, Ill. 60515
Filed Mar. 10, 1972, Ser. No. 233,539
Int. Cl. A22c *18/00*
U.S. Cl. 426—418 **3 Claims**



The method is for tenderizing meat and reducing the shrinkage thereof upon subsequent cooking. The meat is subjected to substantially pure carbon dioxide at a pressure of 30 to 135 p.s.i.g. for an amount of time within the cross-hatched area of FIG. 1. The meat is thereafter stored for about 4 hours and cooked.

3,804,963
PROCESS FOR AGGLOMERATION
Boleslaw Sienkiewicz, Pearl River, and Ferdinand A. Bagley, Scotia, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Continuation of application Ser. No. 43,310, Apr. 23, 1970, now Patent No. 3,695,165, which is a division of application Ser. No. 693,503, Dec. 26, 1967, now Patent No. 3,554,760. This application June 5, 1972, Ser. No. 260,008
The portion of the term of the patent subsequent to Jan. 21, 1988, has been disclaimed
Int. Cl. A23f *1/08*
U.S. Cl. 426—453 **4 Claims**

A process for agglomeration of powders, especially soluble coffee, involving the use of upper and lower jets of steam which impinge against at least one falling curtain of powder at a substantial angle so as to disrupt said curtain into agglomerates which are then wetted and redirected into a drying zone. The purpose of the upper jets of steam is to form agglomerates of varying size, density, and moisture content whereas the purpose of the lower jets of steam is to further wet the agglomerates and render them more uniform in density, size and moisture content while insuring that all of said agglomerates are projected into the drying zone. The appearance of the resulting agglomerates is controlled by varying the grind

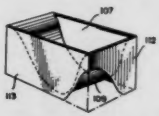


size and particle size distribution of the feed powder material.

3,804,964
METHOD AND APPARATUS FOR TREATING FISH
Klas Ragnar Magnus Hogstedt, Vastra Frolunda, Tryggve Lund Knutsen, Asa Station, Erik Torsten Lennart Svensson, Goteborg, and Sven-Olof Osterman, Molndal, Sweden, assignors to Aktiebolaget Astra Nutrition, Molndal, Sweden
Claims priority, application Sweden, June 4, 1970, 7,789/70
Int. Cl. A22c *25/16;* A23l *1/325*
U.S. Cl. 426—473 **6 Claims**

Fish can be treated to produce a high protein material having substantially reduced taste, odor, and fat content by cutting individual fish into pieces, washing the fish pieces by contacting them with a countercurrent of water, then spraying them with water, and coagulating the pieces with a concurrent steam flow while passing them through a direct-steam boiler. Bones and other nonfibrous hard pieces are separated from the coagulated material which is then homogenized and centrifuged to remove fat, soluble substances, and skin fragments. Preferably the steps of homogenizing and centrifuging are repeated, and the material is then pressed and dried.

3,804,965
METHOD FOR ROASTING MEAT
Leo Peters, 750 Plymouth Road SE., Grand Rapids, Mich. 49506
Original application June 29, 1970, Ser. No. 50,374. Divided and this application Jan. 5, 1972, Ser. No. 215,620
Int. Cl. A22c *18/00, 21/00*
U.S. Cl. 426—523 **4 Claims**



Meat is packaged with a web that is cool regardless of oven heat and that enables it to be roasted by suspending it like a hammock within an oven out of contact with any metal surfaces. The weight of the roast is uniformly supported by the web, and the relatively cool web enables the roast to cook evenly.

3,804,966

FURNACE ELECTRODE CLAMP

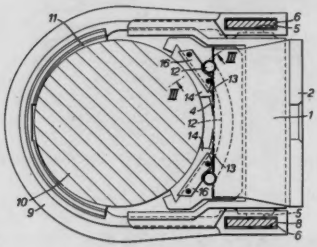
Frank Donald Winter, and Laurence Derrick Truswell, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed July 9, 1973, Ser. No. 377,306

Claims priority, application Great Britain, July 7, 1972, 32015/72

Int. Cl. H05b 7/10

U.S. Cl. 13—16 8 Claims



This invention relates to an electrode clamp embodying two graphite pads or liners which are each key slotted into the clamp body in dovetail-like fashion. The front surfaces are part-cylindrical to mate with the surface of the electrode while the rear surfaces are plain. A water coolant conduit is provided in the clamp body extending alongside the pads providing 'go' and 'return' paths.

3,804,967

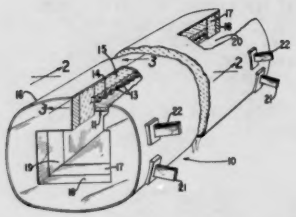
RECTANGULAR TUBE DIFFUSION FURNACE

Ewald R. Werych, Elm Grove, Wis., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Oct. 13, 1972, Ser. No. 297,205

Int. Cl. H05b 3/66

U.S. Cl. 13—22 1 Claim



A diffusion furnace has a processing member with a rectangular cross section having an arcuate-like top wall and a heating element of a substantially elliptical-like cross section surrounding the processing member.

3,804,968

INDUCTION FURNACE

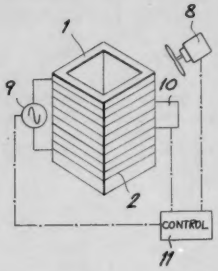
Ignaz Mosser, Braunau, Austria, assignor to Veveinigte Metallwerke Ranshofen-Berndorf AG, Vienna, Austria

Filed June 19, 1972, Ser. No. 264,281

Claims priority, application Austria, June 22, 1971, 5391/71

Int. Cl. F27d 11/06; H05b 5/18

U.S. Cl. 13—27 5 Claims



An induction furnace has a coil formed of an anodized aluminum conductor whose current density is controlled according to the heat resistance of the furnace lining and of its anodized coating. The furnace lining may be formed directly on this coil, and the coil is air cooled.

3,804,969

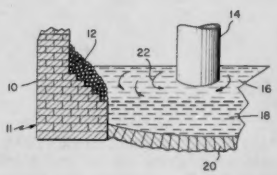
ELIMINATION OF SIDE WALL EROSION IN ELECTRIC FURNACES

Donald G. J. Treilhard, St. Bruno, Quebec, Canada, assignor to Cities Service Company, New York, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,615

Int. Cl. F27d 1/16

U.S. Cl. 13—35 9 Claims



An improved smelting process and electric furnace design for smelting metallic ores by the slag resistance method wherein the furnace includes at least one stepped and fettled wall. The improvement is characterized by fettling positioned on the stepped portion of the wall to reduce or eliminate erosion of the furnace walls in contact with the slag zone.

3,804,970

ELECTRICAL BUS SYSTEM

Murray Oldman, 10855 Savona Rd., Los Angeles, Calif.

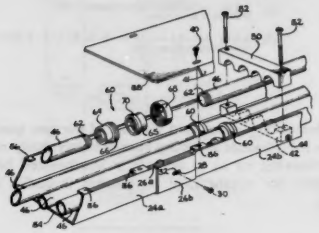
Filed Apr. 24, 1972, Ser. No. 246,772

Int. Cl. H02g 5/06

U.S. Cl. 174—16 B 7 Claims

An Electrical Bus System utilizing insulated conductors which may be readily assembled as desired from standard

components to achieve an efficient, low cost installation. The conductors, generally hollow members, are joined by couplings so that any section of conductor may be removed as desired. Straight sections as well as elbows and the like are provided to result in a conductor assembly with a substantially unrestricted passage therethrough so that cool air may be circulated through the conductor. The conductors are assembled



into a protective housing and retained therein by molded insulator blocks which are molded with screw sockets therein so as to be retainable in the assembly by self-threading screws. The conductors are provided with an insulating jacket thereon which may be readily locally cut away and then a hole drilled and tapped in the conductor to provide an attachment for a power tap.

3,804,971

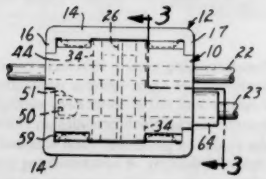
SOLDERLESS WIRE CONNECTOR

James H. Bazille, Jr., Village of North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 157,275, June 28, 1971, abandoned. This application June 5, 1972, Ser. No. 259,653

Int. Cl. H02g *15/08*

U.S. Cl. 174—88 R **6 Claims**



A solderless wire connector including a first connector member having wire receiving channels, and a second connector member mounted on the first connector member for relative movement from an open position to a closed position to engage a contact element carried by the second connector member with wires in the channels. Latching projections, interacting between the connector members to define the positions thereof, afford movement of the connector members to a partially closed position by finger pressure. At the partially closed position retaining members within the connector engage and retain wires within the channels to facilitate use of a pliers for further movement of the connector members to their closed position.

3,804,972

ELECTRICAL CONNECTION OF COAXIAL CABLE ENDS

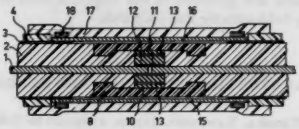
Hubertus Johannes Josephus Gommans, and Josephus Gerardus Henricus Stikkelbroeck, both of Venlo, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,491

Claims priority, application Netherlands, Feb. 8, 1972, 01606

Int. Cl. H02g *15/08*

U.S. Cl. 174—88 C **4 Claims**



A connection for coaxial cable ends in which a connection is obtained between the respective cable dielectrics with the aid of connection pieces of electrically insulating material engaging slots in the dielectric.

3,804,973

INSULATOR LINK

William L. Koch, 2170 Jackson St., San Francisco, Calif.

Filed Mar. 12, 1973, Ser. No. 339,753

Int. Cl. H01b *17/60, 17/02*

U.S. Cl. 174—208 **4 Claims**

An insulator link formed of an insulator body made of three blocks, each block being formed by superimposed glass fiber

cloth sheets compressed together longitudinally of the insulator body; the three blocks are integrated together so that two side blocks have the edges of the sheet therein against the opposite faces of the middle block, so that the sheets in the side blocks are in planes at right angles to the planes of the sheets in the middle block; the glass fiber cloth sheets of all the blocks are loaded with dielectric resins so that the blocks can be integrated into a single cylindrical body under heat and pressure; continuous glass fiber cloth is tightly wound around the periphery of the combined blocks and is also loaded with dielectric resins so that the tightly wound cloth is integrated with the insulator body formed by the blocks also under heat and pressure; the insulator link has an axial hole therethrough, and means are provided in the opposite ends of the hole to securely hold suitable link elements.

3,804,974

APPARATUS FOR RECORDING AND REPRODUCING COLOR VIDEO SIGNALS

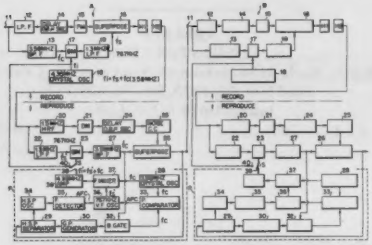
Shigeo Tanaka, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 27, 1971, Ser. No. 212,427

Claims priority, application Japan, Dec. 28, 1970, 45-119795; Feb. 19, 1971, 46-7359

Int. Cl. H04n *9/00*

U.S. Cl. 178—5.4 CD **8 Claims**



In the apparatus for recording and reproducing color video signals, there are provided a recording section operating to convert a modulated subcarrier wave of a first frequency into another modulated subcarrier wave of a second frequency by modulating the carrier wave of the first frequency with a third fixed frequency, a reproducing section for reconverging another modulated subcarrier wave of the second frequency into the modulated subcarrier wave of the first frequency by the action of a modulator operating at the third frequency, and a compensating circuit for compensating for the variation with time of the second frequency of another modulated subcarrier wave thereby obtaining an output of the modulated subcarrier wave having a frequency substantially equal to the first frequency. The output of the third frequency and the output from the compensating circuit are selectively applied to the first mentioned modulator. By the operation of this switching means it is possible to duplicate the color video signals with two video signal recording and reproducing apparatus.

3,804,975

VIDEO SIGNAL DATA SIGNAL COMPRESSION SYSTEM

Takeshi Abe, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

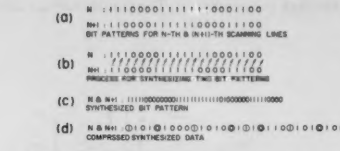
Filed Dec. 27, 1972, Ser. No. 318,842

Claims priority, application Japan, Dec. 30, 1971, 46-1167

Int. Cl. H04n *7/12*

U.S. Cl. 178—6 **4 Claims**

A video signal data compression system is provided in which the video signals obtained by scanning an image or subject copy by a facsimile scanner are quantized and sampled so as to derive quantized bit patterns consisting of bits 1's representing black elementary areas and bits 0's representing



white elementary areas, and the bits of the two quantized bit patterns for adjacent scanning lines are alternately rearranged by interleaving so as to provide a synthesized bit pattern. Thereafter the synthesized bit pattern is coded and compressed.

3,804,976

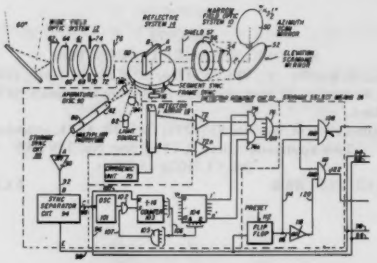
MULTIPLEXED INFRARED IMAGING SYSTEM

Jerold H. Gard, Los Altos, Calif., assignor to Kaiser Aerospace and Electronics Corporation, Oakland, Calif.

Filed May 15, 1972, Ser. No. 252,972

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **16 Claims**



An infrared imaging system in which the image output of each of a plurality of optic systems is scanned by a rotating reflective system and fed in successive vertical segments to a vertical detector array which provides an electrical output related to the radiation pattern of each scanned image segment which is detected thereby. A synchronizing circuit enabled by the reflective system controls electronic readout of the signals provided by the detector array to discrete storage means for each optic system. A separate readout circuit is operative to enable readout of the stored images at a rate which is different than the write-in rate to monitor units, each of which is preassigned to display the image provided by a different one of the optic systems.

3,804,977

COLORED RUNNING LIGHT SIMULATOR

Carl R. Driskell, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

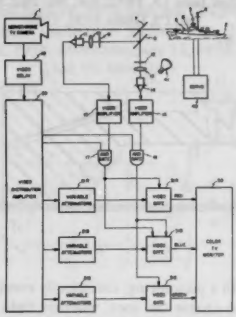
Filed Nov. 20, 1972, Ser. No. 307,882

Int. Cl. H04n *9/02*

U.S. Cl. 178—6.8 **6 Claims**

In a periscope view simulator training device wherein a

dynamic scene including ships at sea is displayed on a television monitor, colored running lights are provided for the dis-



played ships. This is accomplished using video signals from monochrome cameras.

3,804,978

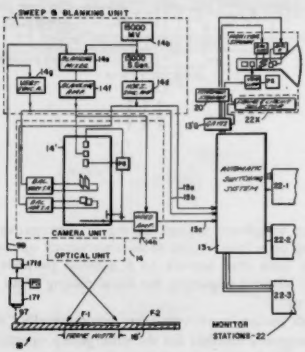
INFORMATION STORAGE AND REPRODUCTION SYSTEM HAVING VERTICAL SYNCHRONIZING SIGNAL INDEPENDENT HORIZONTAL SCANNING FREQUENCY

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation of Ser. No. 347,999, Feb. 26, 1964, which is a continuation-in-part of Ser. No. 765,401, Oct. 6, 1958. This application July 22, 1968, Ser. No. 746,504

Int. Cl. H04n *5/88, 7/18*

U.S. Cl. 178—6.8 **13 Claims**



An elongated film record has a sequence of picture frames and synchronizing indicia for the frames. The film record is transported through a scanning beam which passes through the record to a detector. The scanning beam is driven by a horizontal signal generator which scans the picture frames and synchronizing indicia with the detector developing a first signal representative of the information in the frames, and a vertical synchronizing signal at a frequency related to the rate of movement of the synchronizing indicia, but independent of the frequency of the horizontal signal generator.

3,804,979

DETECTION DEVICES FOR IMAGE ANALYSIS SYSTEMS

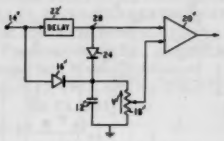
William Ralph Knowles, 40 Flambards Close, Meldreth, England

Filed Oct. 27, 1971, Ser. No. 192,831

Claims priority, application Great Britain, Oct. 29, 1970, 53405/70

Int. Cl. H04n *5/14*

U.S. Cl. 178—7.1 **1 Claim**



The invention concerns detection devices for image analysis systems in which an amplitude modulated video signal is obtained by line scanning. A two value signal is obtained by comparing the instantaneous amplitude of the video signal with a reference voltage so that the detector output comprises an electrical pulse each time the amplitude e.g. exceeds the reference voltage. The duration of each pulse is equal to the duration of the excess amplitude excursion.

3,804,980

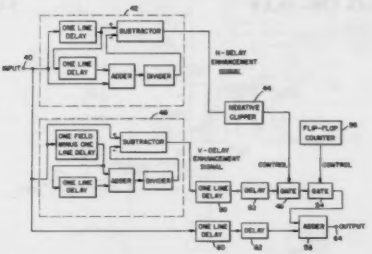
VERTICAL SHARPNESS ENHANCEMENT OF VIDEO PICTURES

John D. Lowry, Willowdale, Ontario, Canada, assignor to Elianin Investments, Ltd., Toronto, Canada

Filed Mar. 1, 1972, Ser. No. 230,703

Int. Cl. H04n *5/14, 5/21*

U.S. Cl. 178—7.1 **13 Claims**



The vertical sharpness of scanned video pictures is enhanced by interlacing the conventional two-field, 525-line scan with a pair of auxiliary field scans duplicating the conventional fields. At vertical transitions, the conventional intra-field comparison enhancement signal is combined with an inter-field comparison enhancement signal to produce a one-line enhancement signal which is then applied to the auxiliary scan only. As a result, the vertical transition takes place in approximately 0.1 percent of the picture height as compared to approximately 0.8 percent of the picture height as in conventional systems.

3,804,981

BRIGHTNESS CONTROL

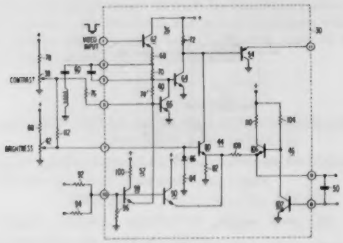
Jack Avins, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,021

Claims priority, application Great Britain, Nov. 8, 1971, 51,851/71

Int. Cl. H04n 5/14

U.S. Cl. 178—7.3 R 9 Claims



Television video signal processing circuits suitable for construction in integrated circuit form. Direct current, contrast and brightness controls are provided as well as retrace blanking and automatic brightness limiting (ABL) functions. In a color television receiver, the luminance channel and chrominance channel controls may be interconnected to maintain desired relationships between contrast, brightness and color level as each control is adjusted.

3,804,982

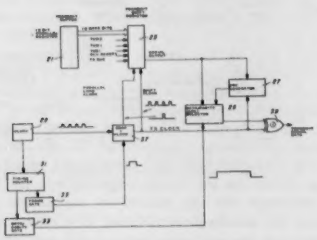
DATA COMMUNICATION SYSTEM FOR SERIALLY TRANSFERRING DATA BETWEEN A FIRST AND A SECOND LOCATION

Frederick W. Brown, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 10, 1972, Ser. No. 279,606

Int. Cl. H04l 7/00

U.S. Cl. 178—69.5 R 9 Claims



A data communications system has capacity for serially transferring data between a first and a second location. There is a transmitter at the first location with the transmitter capable of storing data prior to transmission. A series of clock pulses is generated having a duty cycle less than one-half. The data and the clock pulses are modulo two serially added to produce a transmitted data stream. There is a receiver at the second location. The receiver receives the transmitted data stream and obtains from the data stream bit synchronization and data.

3,804,983

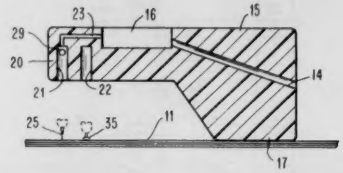
HAND HELD PROBE FOR USE IN ELECTRICAL SENSING OF PLANE COORDINATES

George S. Hurst, Oak Ridge, Tenn., assignor to The Board of Trustees by the University of Kentucky, Lexington, Ky.

Filed June 13, 1972, Ser. No. 262,345

Int. Cl. G06k 9/00, 7/00

U.S. Cl. 178—87 4 Claims



A probe with a puncturing, electrically conducting needle is constructed to enable the user, whether right or left handed, to position the needle rapidly and accurately at a selected coordinate of a sensor package.

3,804,984

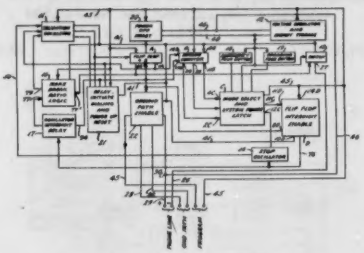
EMERGENCY CIRCUITRY FOR COIN TELEPHONE

Jerry J. Yachabach, Lakeland, Fla., assignor to Teltronics, Inc., Lakeland, Fla.

Filed Jan. 25, 1972, Ser. No. 220,662

Int. Cl. H04m 17/02, 1/30

U.S. Cl. 179—6.3 R 14 Claims



A coin telephone system having an emergency circuit by providing coin free access to an emergency operator and alternately coin free service to a general purpose telephone operator without requiring the usual dialing of an emergency number or "0".

A push button is provided for automatically "dialing" the emergency number for the emergency operator by a circuit which generates electrical pulses which are counted to predetermined numbers by an electric counter and transmitted over the usual telephone circuitry so as to provide the conventional dialing signals for the numbers of the emergency call. Similarly, a second push button is provided which provides for operating a circuit for counting pulses generated by the system to provide the regular telephone circuitry with a digital indication of the number "10" or "0" which will alert the general purpose telephone operator. Both of these push buttons are operable without the deposit of a coin by providing for bypassing the conventional coin controlled circuitry of the telephone.

3,804,985
PHASE-DIFFERENCE-MODULATION COMMUNICATION SYSTEM

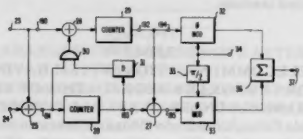
Yoshio Matsuo, Tokyo, Japan, assignor to Nikkon Electric Company, Limited, Tokyo, Japan

Filed June 18, 1971, Ser. No. 154,583

Claims priority, application Japan, June 18, 1970, 45-53245; June 18, 1970, 45-53246; July 23, 1970, 45-64838

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **15 Claims**



A frame synchronization technique for a phase-difference modulation communication system. A carrier wave is phase-difference modulated in accordance with information signals emanating from a plurality of information channels and subsequently time-division multiplexed into a series of time frames. The time-division multiplexed signal is then stepwise phase difference modulated to provide a stepwise shift at a rate corresponding to the length of a time frame. This stepwise phase shift defines each time frame. In this manner frame synchronization can be accomplished without the use of additional frame synchronization pulses.

3,804,986
ELECTRICAL WIRING SYSTEM

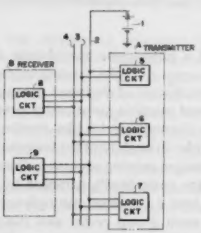
Hisato Wakamatsu, Kariya, and Masami Amaki, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, both of, Japan

Filed Oct. 29, 1971, Ser. No. 193,900

Claims priority, application Japan, Oct. 31, 1970, 45-96107; Feb. 6, 1971, 46-4835; Feb. 27, 1971, 46-10208; Mar. 30, 1971, 46-18996

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 A **6 Claims**



An electrical wiring system in which control signals generated from an instruction signal generator are transmitted from a transmitter by means of multiplex communication to a receiver for controlling a plurality of loads and three conductors are required at most thereby simplifying the wiring arrangement and improving the reliability. The transmitter includes means for producing a time division pulse signal, and a first logic circuit having means for assigning respective channels to a plurality of signals to be transmitted in response to the application of the time division pulse signal, discriminating the occurrence within channels of the signals generated by the instruction signal generator and delivering from a single output terminal a signal including a series of the signals separated from each other in respect of time. The receiver includes a second logic circuit having means for assigning channels to a plurality of signals in response to the application of the time division pulse signal transmitted by way of one of the conductors and discriminating the signals corresponding to the channels in the signal transmitted from the output terminal of the first logic circuit by way of another conductor so as to drive the loads by the signals thus discriminated.

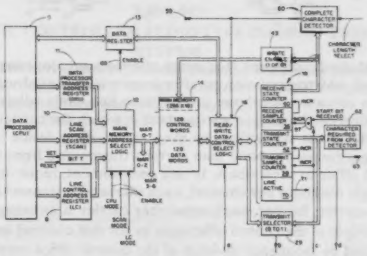
3,804,987
MULTIPLEXING APPARATUS HAVING INTERLACED AND/OR PARALLEL DATA TRANSFER WITH A DATA PROCESSOR AND COMMUNICATION LINES

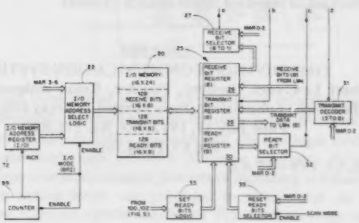
Stuart B. Cooper, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 13, 1972, Ser. No. 234,175

Int. Cl. H01j *3/00*

U.S. Cl. 179—15 A **13 Claims**





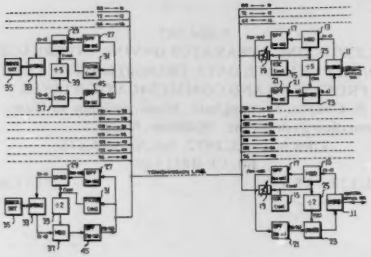
Multiplexing apparatus which includes a memory system coupled for transfer of information with a data processor and a plurality of communication lines. The memory system may include a main memory and an input/output memory coupled for transfer of information with a data processor and the communication lines respectively and with each other. The apparatus is configured to make maximum utilization of all time available and includes timing and control logic so that at all times there is transfer of information between the following coupled elements namely either (a) the main memory and processor are coupled, and the main memory and input/output memory are coupled; or (b) the main memory and processor are coupled, and the input/output memory and the plurality of communication lines are coupled; or (c) the main memory and input/output memory are coupled.

3,804,988

CARRIER SYSTEM FOR EFFICIENT CONNECTION OF TELEPHONE SUBSCRIBERS TO CENTRAL OFFICE

Sidney Browne, Falls Church, Va., assignor to Carrier Telephone Corporation of America, Inc., Falls Church, Va.

Filed July 14, 1972, Ser. No. 271,737
Int. Cl. H04j 1/06
U.S. Cl. 179—15 FS **19 Claims**



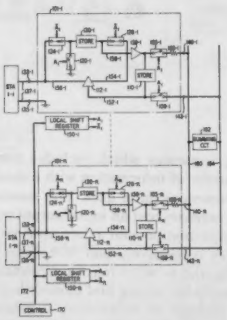
Multiple adjacent frequency channels employ single sideband AM transmission to afford optimized shared utilization of a common telephone transmission line while adhering to a station carrier frequency standard in which the carriers transmitted from subscribers to the central office reside in a different frequency band than carriers transmitted from the central office to subscribers. In one embodiment, requiring only a single oscillator per channel, each sideband is transmitted with its carrier; further, each subscriber carrier is an integral submultiple of the central office carrier for that channel and is obtained by frequency division of the central office carrier. In a second embodiment a common IF oscillator at the central office is used for modulation and detection, permitting identical IF filters to be employed in each channel. In a third embodiment the concepts of the first two embodiments are combined to require only a single oscillator per channel and to permit utilization of standard filters in each channel.

3,804,989

TIME DIVISION COMMUNICATION SYSTEM

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 31, 1972, Ser. No. 276,833
Int. Cl. H04j 3/02
U.S. Cl. 179—15 AT **23 Claims**



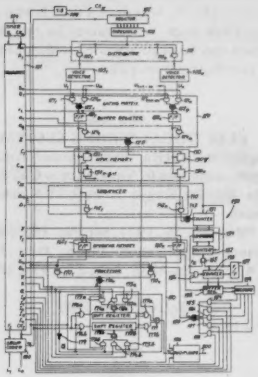
A time division communcation system wherein a plurality of time slots occurs in repetitive cycles includes a plurality of stations, first and second buses, a control signal source and a coupling circuit operative in each time slot to sum all signals applied to the second bus and to apply the resultant sum signal to the first bus. Each station has an associated circuit including first and second stores. The first bus signal is applied to the first store in response to the control signal and is coupled via a coupling device to the station. The coupler is arranged so that the second store only stores the station outgoing signal. In response to the control signal, the second store is disconnected from the coupling device; and the station outgoing signal from the second store is applied to the second bus and also to the first store wherein it is subtracted from the first bus signal. The control signal is applied to selected station circuits in a distinct time slot whereby signals are exchanged among the selected stations.

3,804,990

PCM TELECOMMUNICATION SYSTEM HAVING MEANS FOR TEMPORARY DEGRADATION OF VOICE CHANNELS UNDER OVERLOAD CONDITIONS

Gianmario Costa, Cornaredo (Milan); Giancarlo Monti, Milan; Isidoro Poretti, Castiglione Olona (Varese), and Alvaro Bagnoli, Milan, all of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Dec. 29, 1972, Ser. No. 319,178
Claims priority, application Italy, Dec. 29, 1971, 33073/71
Int. Cl. H04j 5/00
U.S. Cl. 179—15 AS **10 Claims**



A terminal of a pulse-code-modulation (PCM) time-division multiple-access (TDMA) telecommunication system, serving for the exchange of digitized message samples in the form of interleaved multibit pulse codes between a multiplicity of local voice channels and a like number of remote voice channels accessible through another terminal, includes at least one processing station serving several *n*-channel groups whose incoming lines are periodically sampled by respective group coders working into a common multiplexer. A processor inserted between each group coder and the multiplexer comprises a pair of alternately operative shift registers which receive only the coded voice samples from active lines, as determined by a monitoring circuit including a multiplicity of voice detectors, and subsequently discharge them at an accelerated rate in an intermittent code sequence for intercalation in a PCM frame with similar code sequences from other processors of the station. The voice detectors deliver an activity pattern for all the *n* channels of the corresponding group to an allocation-message generator provided with an *n*-stage input memory and an n-stage operating memory; characteristic bits representing active stages are transferred, stage by stage, from the input memory to the operating memory while an electronic sequencer, taking *n* steps per frame, scans the input memory to determine the number *k* of such bits present

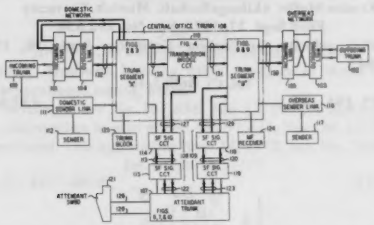
in each frame. An arithmetic unit, including several pulse counters and a comparator, divides this number k into the maximum number s of a communication time slots allotted to the group in an assigned subframe of the multiplexer; the quotient s/k determines the number b of bits per code word to be transmitted from this particular group, this number being reduced from its normal value b_{max}=8 to 7, 6, 5 or 4 in the case of overload. A similar arithmetic unit at the associated receiving station controls a decoder for the truncated code words in response to an allocation-message extractor analogous to the allocation-message generator of the transmitting station.

3,804,991

TRUNK ARRANGEMENT WITH REMOTE ATTENDANT FACILITIES

Ronald Wayne Hammond, Reynoldsburg, Ohio; Robert Morris Morris, Brielle, N.J.; Richard Joseph Powondra, Lincroft, N.J., and Alexander Robert Ross, Freehold, N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed July 24, 1972, Ser. No. 274,570
Int. Cl. H04m 7/14
U.S. Cl. 179—26 **14 Claims**



An arrangement for interconnecting incoming and outgoing trunks at a toll switching center under the control of a remote attendant switchboard is disclosed. The toll center portion of the arrangement includes a multiport transmission bridge with a two-way trunk segment connected to one port and a one-way segment connected to another port. A third port of the bridge is connected over a first transmission facility to the remote switchboard while the one-way trunk is connected directly to the remote switchboard over a similar but separate facility.

The attendant can receive or originate calls through the switching center using the first transmission facility and the two-way trunk or the attendant can originate calls using the one-way trunk under control of the second transmission facility. Upon receipt of answer supervision over the one-way trunk, the second transmission facility between the one-way trunk and the attendant is disconnected, leaving the two-way trunk segments and the attendant connected via the bridge. By signaling over the second transmission facility the attendant can ring forward on the one-way trunk or disconnect the first transmission facility.

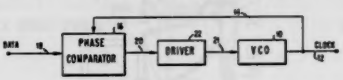
3,804,992

DIGITAL TIME SAMPLING PHASE COMPARATOR WITH NOISE REJECTION

Benjamin C. Fiorino, 1222 Princeton Dr., Longmont, Colo., and Juan A. Rodriguez, 4236 Evans Dr., Boulder, Colo.

Continuation of Ser. No. 886,920, Dec. 22, 1969. This application Mar. 13, 1972, Ser. No. 234,385
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 R **8 Claims**

A digital time sampling phase comparator for use in a data receiving system to generate error correction pulses which are used to synchronize the generation of clock pulses with incoming data pulses. The phase comparator is time sampling because it generates error correction pulses whose time durations are equal to the time differences between transitions of input data pulses and reference transitions of generated clock pulses. In addition, the comparator has a noise rejection feature which removes from the correction pulses errors caused



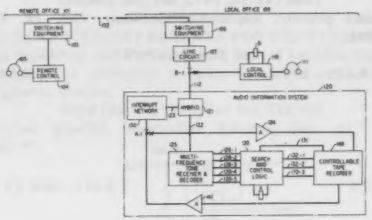
by random noise in the input data. Noise rejection is achieved by generating pulses for each positive and negative voltage transition of the input data pulses and ANDing these generated pulses with either a data or an inverted data pulse, depending upon whether the detected transition is positive or negative.

3,804,993

LOGIC CONTROLLED AUDIO TAPE INFORMATION SYSTEM

George Herbert Honnold, Middletown, and Katharine Blossom Prival, Lincroft, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 3, 1972, Ser. No. 268,541
Int. Cl. G11b 15/18, 23/36
U.S. Cl. 179—100.1 PS **9 Claims**



An audio information system for providing information in preprogrammed segmented form includes a multifrequency tone receiver and decoder, a search and control logic circuit and a controllable tape recorder. Message segments, for example, steps of a maintenance procedure including associated corrective action steps, are recorded in serial form on an audio tape. Control signals associated with each message segment including addresses of related message segments are also recorded on the tape. Given a command and/or address the information system automatically locates and plays back the desired message segment. At the end of each message segment a choice may be made of repeating the last played segment, continuing to the next segment in the procedure, branching to a corrective action procedure or playing some other desired message segment.

3,804,994

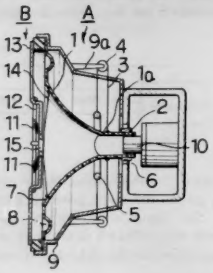
DIAPHRAGM SUPPORT

Tomio Turuga, Daini, Shiotaso, 7-64-10 Tsudanuma, Narashino-shi, Chiba-ken, Japan

Filed Aug. 11, 1972, Ser. No. 279,913
Claims priority, application Japan, Sept. 7, 1971, 46-69122; Sept. 7, 1971, 46-81124
Int. Cl. H04r 9/06
U.S. Cl. 179—115.5 R **3 Claims**

A speaker comprising rear support means having threads provided at the rear part of a diaphragm, a ring weight tied at each end of said threads and arranged in space around said

diaphragm, and fulcrums mounted on a yoke to support said threads. Front support means are also disclosed. This structure keeps the diaphragm in balance and permits reduction of stiffness and improvement of the frequency characteristics of the speaker.



3,804,995

ARRANGEMENT FOR SUPPRESSING OVERSHOOT CAUSED BY LEVEL REGULATION IN CARRIER-FREQUENCY SYSTEMS

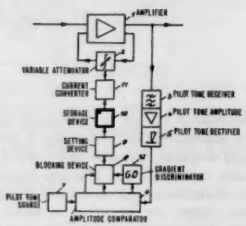
Leo Beckr, Affalterbach, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,052

Claims priority, application Germany, Oct. 18, 1971, 2151794

Int. Cl. H04m *7/10*

U.S. Cl. 179—170 A **10 Claims**



This relates to level regulation in a carrier frequency system with a plurality of repeaters in tandem. More particularly, the level regulator at the repeaters suppress overshoot (excessive regulation) by one or more regulators. The level regulator is disposed in each repeater of a pilot-controlled repeater chain. Suppression of overshoot is obtained by a gradient discriminator in each repeater which detects the rate of change of the pilot level deviation from a nominal level. If the rate of change exceeds a predetermined value, the level regulator is blocked.

3,804,996

COLLECTOR INSULATING BOOT

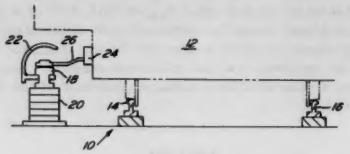
William Monteith, New Carrollton, Md., assignor to Alan Goodman, Narberth; William Korb, Churchville and Louis Godshalk, Radnor, all of, Pa., part interest to each

Filed Aug. 3, 1972, Ser. No. 277,707

Int. Cl. B60l *5/38*

U.S. Cl. 191—1 **7 Claims**

A collector insulating boot designed to fit on a vehicle collector shoe to isolate a faulty current collect circuit from a power rail and for use with electrically driven vehicles. The boot is readily detachable from the collector shoe.



3,804,997

CONTACT SYSTEM FOR HIGH-SPEED ELECTRICALLY OPERATED VEHICLES

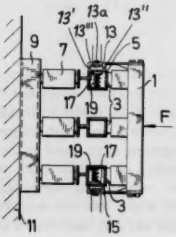
Peter Schwarzler, Furstenfeldbruck; Gunter Winkle, Munich, and Peter Molzer, Hebertshausen, all of Germany, assignors to Krauss-Maffei Aktiengellschaft, Munich, Germany

Filed Sept. 27, 1972, Ser. No. 292,638

Claims priority, application Germany, Sept. 30, 1971, 2148943

Int. Cl. B60l *5/40*

U.S. Cl. 191—48 **13 Claims**



The contact shoe or shoes of an electrically operated high-speed vehicle, traveling along a track provided with contact rails engageable by these shoes for the delivery of electric current to the vehicle, is guided by applying a contactless force field between guide portions of the contact rail assembly and support portions of the brush assembly. The force field is preferably derived from a magnetic field or an air cushion.

3,804,998

DRAW OUT CIRCUIT BREAKER WITH IMPROVED DRAW-IN BOLT CONTACT MOUNTING MEANS

James O. Rexroad, Beaver, and Louis N. Ricci, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

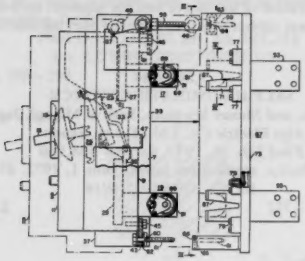
Filed Dec. 19, 1972, Ser. No. 316,635

Int. Cl. H01h *33/46*

U.S. Cl. 200—50 AA **6 Claims**

A circuit breaker structure of the draw-out type characterized by a multi-pole circuit breaker which is adapted for quick removal and/or replacement of a circuit breaker having

at least two horizontally spaced poles, each pole comprising two vertically spaced incoming and outgoing terminals, and



draw-in bolts operative to move the terminals into tight electrical contact with corresponding bus conductor terminals.

3,804,999

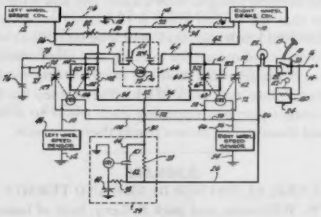
ANTI-SKID VEHICLE BRAKING SYSTEM

Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 161,885, July 12, 1971, which is a continuation-in-part of Ser. No. 97,431, Nov. 30, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,214

Int. Cl. H01h *35/10*

U.S. Cl. 200—80 R **3 Claims**



A non-skid brake control system for vehicles, particularly towed vehicles having electrically, pneumatically and/or hydraulically operated brakes controlled from the towing vehicle. A pair of braked wheels of the towed vehicle, one on each side of the vehicle, each have a speed sensing switch to sense the rate of rotation of the associated braked trailer wheel so as to provide anti-skid modulation to the associated brake when differential braking occurs between these braked wheels. The system automatically disables the anti-skid modulation when the vehicle speed is below an adjustable predetermined speed to thereby provide full braking effort under static, hill-holding or low speed conditions. Wheel speed sensing switch constructions are employed which utilize reed switches magnetically actuated by a permanent magnet carried on a centrifugally actuated flyweight mechanism. The anti-skid system may be further modulated by a vehicle speed sensing switch to prevent dual wheel lock-up above a given vehicle speed.

3,805,000

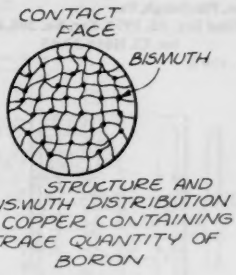
VACUUM INTERRUPTER AND METHODS OF MAKING CONTACTS THEREFOR

James William Roy, Lenox, Mass., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 21,919, March 23, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,204

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **2 Claims**



An electrical contact for a vacuum switch comprising copper containing boron. Bismuth may also be advantageously added.

3,805,001

GAS BLAST CIRCUIT BREAKER FOR HIGH VOLTAGES

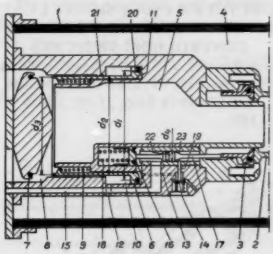
Hugo Sandkvist, and Tore Nygaard, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 27, 1972, Ser. No. 318,907

Claims priority, application Sweden, Dec. 31, 1971, 17001/71

Int. Cl. H01h *33/86*

U.S. Cl. 200—148 B V **8 Claims**



A gas blast circuit breaker for high voltages has an elongated breaking chamber permanently filled with compressed gas which contains a power break with a movable contact. An operating device for the movable contact is positioned at one end of the breaking chamber. An exhaust channel runs through the breaking chamber with its outlet at the other end of the breaking chamber. A blast valve is mounted for closing and opening the outlet. The blast valve is actuated towards closing position by fluid under pressure from the breaking chamber, supplied through a passage leading by a first auxiliary valve. The blast valve is closed by the opening movement of the movable contact through a push rod which acts to open

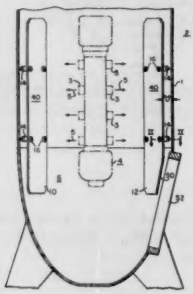
the first auxiliary valve when the contact opens. A second auxiliary valve connected to the outside and also operated by the push rod is opened when the breaker is closed so as to open the blast valve.

3,805,002

RESILIENTLY-MOUNTED BLAST-SHIELD FOR THE TANK OF AN OIL-CIRCUIT BREAKER

Robert L. Hess, North Versailles, and Edward P. Donohue, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1971, Ser. No. 208,482
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 R **9 Claims**



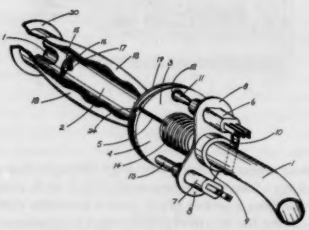
The invention teaches the use of a shock-resisting non-gas-absorptive plate of insulating material mounted on the internal tank walls of an oil circuit-breaker, and centered on the current-interrupter vents. Resilient rubber insulators are used in resiliently mounting the shock-resisting plate to absorb the shock forces exerted by the ionized gas products striking the shield. The insulating barrier is permitted to resiliently move to accommodate short-duration pressure differences on the front and rear faces thereof, thus avoiding damaging deflections of the plate.

3,805,003

MOTORCYCLE HANDLE SIGNAL CONTROL ROTATABLE OR DEPRESSIBLE TO ACTUATE SIGNAL CONTROLLING SWITCHES

William Marion Rennels, 930 E. La Pasadita, Tucson, Ariz.

Filed Nov. 15, 1972, Ser. No. 306,806
Int. Cl. H01h *9/06, 21/10, 25/06*
U.S. Cl. 200—157 **5 Claims**



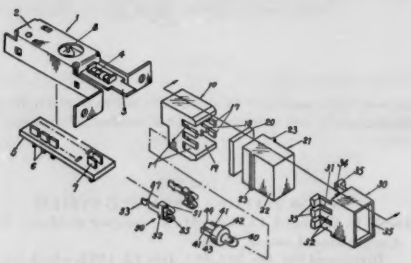
The warning signal control of the present invention is especially adapted to be employed on vehicles which are steered by means of a handle-bar, such as motorcycles, and the like. The signal control comprises an elongated tubular sleeve which is rotatably mounted on the end portion of one of the handle-bars, its rotation being limited by a pin carried by the handle-bar which engages a transverse slot in the sleeve. The inner end of the sleeve is provided with a disc, one segment of which is firmly secured to the sleeve and the other segment is hinged thereto whereby it may be swung inwardly, and out of the plane of the secured segment, to actuate a switch for the warning signal. The secured segment engages the actuating arm of a switch which operates turn signals when said arm is moved by rotation of the sleeve and the segment secured to it. A conventional rubber grip may be fitted over the sleeve.

3,805,004

SELF-ILLUMINATING SWITCH

Shiro Kondo, and Masao Michioto, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1973, Ser. No. 335,960
Claims priority, application Japan, June 1, 1972, 47-64601
Int. Cl. H01h *9/02, 9/16*
U.S. Cl. 200—311 **2 Claims**



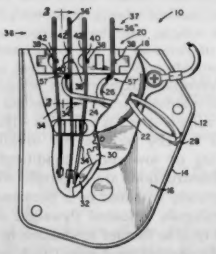
A self-illuminating switch including a switch encased in a switch frame, a light-transmitting switch knob received in a knob holder, and means for illuminating said switch knob from interior of the knob holder in response to the operation of said switch is further improved by the provision of at least a projection on each side of the switch knob, a plurality of resilient projections, each having a groove for receiving said projection, formed integral with a knob cap and with the knob holder, so that the switch knob is resiliently received in said knob holder and knob cap, said switch being further improved by the provisions of means for holding said illuminating means in said knob holder, said holding means being made of Y-shaped metal plate, two arms of which are folded back into V-shaped contact portions opposing each other to hold a lead wire of said illuminating means firmly therebetween.

3,805,005

ELECTRICAL SWITCH BLADE AND TERMINALS

Richard W. Wilkinson, and Jack B. Levy, both of Indianapolis, Ind., assignors to P.R. Mallory & Co., Inc., Indianapolis, Ind.

Filed May 12, 1972, Ser. No. 252,921
Int. Cl. H01h *1/58*
U.S. Cl. 200—284 **3 Claims**



A movable switch blade for an electrical switch provided

with an external terminal outside the switch and an internal terminal inside the switch for attaching a wire lead.

3,805,006

RESILIENT ELECTRICAL CONTACT ASSEMBLY

Richard W. Clark, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1972, Ser. No. 297,213
Int. Cl. H01r *39/40;* **H01H** *1/50*
U.S. Cl. 200—290 **1 Claim**

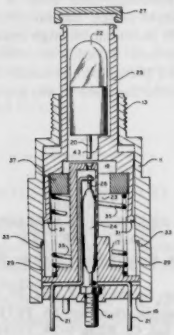
An insulating support plate has an aperture therethrough for receiving an electrical contact pin reciprocally movable in the aperture. One end of the aperture is threaded. A coil spring around the pin has the coils at one end formed to match the threads of the aperture and are threaded into the aperture. The remainder of the spring has a larger pitch for resilience and the other end frictionally engages the pin and abuts against a shoulder on the pin so that the pin is secured to the support by the spring and is resiliently movable relative to the support.

3,805,007

LAMP-SWITCH ACTUATOR APPARATUS WITH INTEGRAL LAMP EJECTOR

Kenneth J. Leff, Somers, Conn., assignor to Gordos Corporation, Essex, N.J.

Filed June 26, 1973, Ser. No. 373,889
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 A **7 Claims**



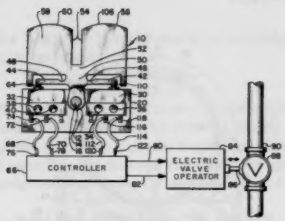
An improved lamp-switch actuator apparatus in which the switch plunger is provided with flexible detents which permit pulling out to override stops in the lamp case whereupon a portion of the plunger which fits in a cut-away section of the lamp socket will eject the lamp from its socket. The plunger has a removable cover so that upon again depressing the plunger, the lamp will be exposed and may be removed and a new lamp inserted.

3,805,008

ROCKER ACTUATOR FOR PUSH BUTTON SWITCHES

Christian E. Kessler, Roslyn; Ralph M. Levy, Abington, and William Donald McDermott, Roslyn, all of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 13, 1972, Ser. No. 297,330
Int. Cl. H01h *3/02*
U.S. Cl. 200—332 **10 Claims**



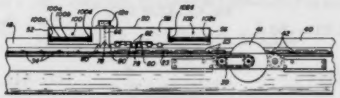
A switch actuator comprising a resilient rocker plate that is pivotally mounted for rocking motion with respect to and for alternate actuation of two spring biased button switches. The plate is formed with oppositely disposed resiliently hinged arms. Each arm is arranged to actuate an individually associated one of the switches as the plate is rocked to one extreme position or the other. The resilient hinge of each arm is obtained by providing a recess in the portion of the arm adjacent the connection thereof to the plate. Stops are provided for limiting the rocking movement of the rocker plate whereby the force actuating the button switches is determined by the resilience of the hinged arms. The hinges of the arms are so made as to provide only that force required to actuate the button switches, thereby precluding applying overloading forces to the switches.

3,805,009

APPARATUS FOR SUPPLYING MICROWAVE ENERGY TO FOODS AS THEY ARE FRIED

Samuel G. Sweet, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Jan. 18, 1973, Ser. No. 324,697
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **4 Claims**



Microwave energy is supplied to an antenna structure provided within a fat frier for applying the microwave energy at improved efficiency to food products floating on the surface of the heated fat and conveyed continuously beneath the antenna. The antenna consists of parallel rods which couple microwave energy to the food products, e.g., donuts positioned beneath the rods. The rods are positioned in a plane parallel to the surface of the fat and are arranged in a balanced linear structure made up of two parallel rods at a distance from one another which is a fraction of one wave length, (e.g., one-quarter of one wave length). Wave peaks are present one quarter of a wave length from a shorting plane placed at the end of each pair of rods. Several sets of such rods are connected by feeder lines that transfer energy from one rod pair

to another. Around each rod is an electromagnetic field the strength of which drops by about half each quarter of an inch proceeding away from the rod thereby reducing the loss of power to the frying fat.

3,805,010

INSTALLATION OF HEATING BY INDUCTION

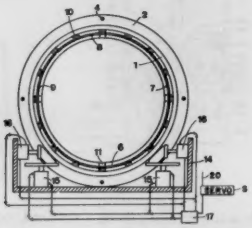
Michel Charles Cuvelier, Liege, Belgium, assignor to Elphiac, Brussels, Belgium

Filed Jan. 15, 1973, Ser. No. 323,922

Claims priority, application Belgium, Jan. 14, 1972, 112830

Int. Cl. H05b *5/06*

U.S. Cl. 219—10.77 **3 Claims**



This invention relates to an induction heating apparatus for the heating of continuously moving tubes of large diameter and great length. The apparatus is made up of a cylindrical inductor having a series of induction spiral turns through which the tubes move. A shield held stationary with respect to the inductor and disposed between the induction turns and the tubes to be heated is provided therefor. This shield is formed of a plurality of sheet-metal plates which are electrically and thermally insulated from one another along the juxtaposed edges thereof. The position of the inductor is made adjustable with respect to the tubes and in relation to the local heat losses therefrom by means of hydraulic jacks. Feeling prongs and temperature sensitive probes are held close to either one of the inductor end supports to detect any variation in the heat distribution across the tubes whereby to obtain a uniform heat distribution there across by varying the inductor position accordingly.

3,805,011

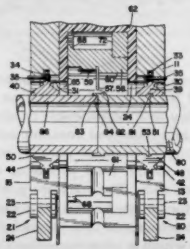
METHOD AND APPARATUS FOR WELDING

James O. Knaefel, Willoughby, and Phillip E. Robinson, Wickliffe, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Aug. 30, 1972, Ser. No. 284,739

Int. Cl. B23k *9/02*

U.S. Cl. 219—60 A **13 Claims**



A method and apparatus for welding one member to another, one of the members being formed with a locating means spaced a predetermined distance from the intended location of the weld relative to such one member. The apparatus includes a welding tip and a means for clamping both members in position for welding. The clamping means has a locating means cooperable with the locating means on the one member and so spaced from the welding tip that when the members are clamped the welding tip will be automatically positioned opposite the intended location of the weld.

3,805,012

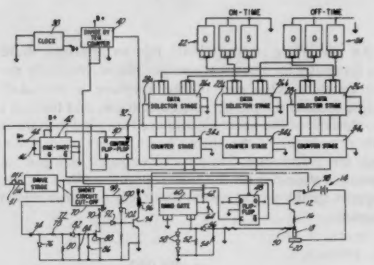
ELECTRICAL DISCHARGE MACHINING POWER SUPPLY WITH PROTECTIVE SYSTEM FOR OUTPUT SWITCH FAILURE

Oliver A. Bell, Jr., Mooresville, and Randall C. Gilleland, Statesville, both of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Mar. 16, 1973, Ser. No. 341,980

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 S **14 Claims**



A digitally controlled multivibrator for the power supply is used to supply machining power pulses of predetermined ON and OFF time duration. The pulse output from the digital multivibrator is passed through at least one intermediate drive stage to trigger an electronic output switch, which is operatively connected both to a main DC power source and the gap, to actually provide the machining power pulses thereto. Responsive to a predetermined drop in drive signal being furnished to the output switch, the cut-off of the main machining power source is provided through operation of a field effector transistor switch. In addition, the protective system which would cut off the output switch in its fail-short condition is inhibited for the duration of any gap short circuit condition.

3,805,013

ELECTRICAL RESISTANCE WELDING OF COATED SHEET METALS

Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Germany

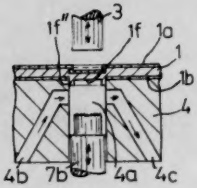
Division of Ser. No. 869,668, Oct. 27, 1969, Pat. No. 3,629,544. This application Dec. 16, 1971, Ser. No. 208,963

Int. Cl. B23k *9/28, 11/10*

U.S. Cl. 219—92 **4 Claims**

The invention provides a method for the electrical resistance welding of coated sheet metals, in which welding current is fed to at least one of the coated sheets indirectly through the metal layer thereof and contact is established between blank areas thereof to be welded to each other, wherein annular or elongated knife edges are provided at the

welding area of the sheet metal to be welded on or on intermediate welding pieces, and cavities are produced by embossing and/or by milling, for preserving an outer coating undamaged by the heat of welding.



3,805,014

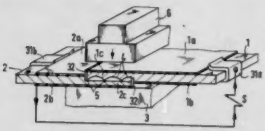
RESISTANCE WELDING

Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Germany

Filed Mar. 28, 1972, Ser. No. 238,918

Int. Cl. B23k *9/28*

U.S. Cl. 219—92 **10 Claims**



Metal sheets or other metal articles consisting of the same or different metals and being of the same or different thickness are joined by resistance welding to each other by first providing a plurality of contact bridges preferably of linear shape, for instance, ribs, projections, and the like at least on one of the welding surface areas of said metal articles or on their cut edges and then effecting resistance welding, especially by means of condenser discharge welding machines after contacting the welding surface areas under pressure. The contact bridges are produced by means of mechanically rotating cutting tools, such as milling cutters, turning tools and the like. The contact bridges can be replaced by profiled inserts which are inserted between the bare welding surface areas or cut edges of the metal articles.

3,805,015

LASER APPARATUS SUPPORTED BY AN OPTICAL BENCH

Gerd Bernd Herziger, Gumligen, and Jurg Steffen, Kehrsatz, both of Switzerland, assignors to Institut fur angwandte Physik der Universitat Bern, Bern and Pierres Holding S.A., Biel, both of, Switzerland

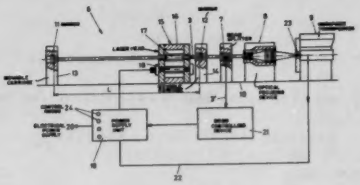
Filed Feb. 24, 1972, Ser. No. 229,122

Claims priority, application Switzerland, Feb. 25, 1971, 2844/71

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 L **2 Claims**

Workpieces are fed in succession to a laser beam to be machined thereby, the laser beam being produced by a laser resonator oscillating in the fundamental transverse mode and incorporating a laser head with a laser rod and energizing lamp, and two spaced mirrors flanking the head and aligned therewith. The mirrors are spaced at a distance to provide an effective mirror spacing which is equal to one half of the focal length of the laser rod, the rod acting as a condenser lens at operational temperatures.



3,805,016

TUBULAR COMPOSITE WELDING WIRE FILLED WITH POTASSIUM COMPOUNDS CONTAINING FLUX

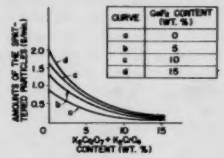
Kazuo Soejima, Fujisawa; Takeshi Sugahara; Kazuo Fukuda, both of Kawasaki, and Kazuya Hashimura, Fujisawa, all of Japan, assignors to Nippon Oil and Fato Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1971, Ser. No. 204,669

Claims priority, application Japan, Mar. 2, 1971, 46-10870

Int. Cl. B23r *35/22*

U.S. Cl. 219—146 **9 Claims**



A tubular composite welding wire for use in the automatic or semi-automatic welding process, which comprises:

a. a tubular casing of a member selected from the group consisting of steel and a ferrous alloy and

b. a filler material containing a flux therein,

in which said flux comprises a conventional fluxing agent composed of one or more of oxides, fluorides, alloying additives, carbonates and deoxidizing and denitrogenizing agents, and potassium dichromate and/or potassium chromate.

3,805,017

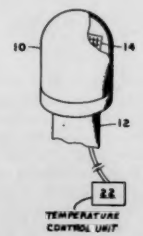
RADOME ANTI-ICING SYSTEM

Donald J. Roberts, Claremont, and David L. Feasby, Pomona, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed July 17, 1972, Ser. No. 272,236

Int. Cl. H05b *1/00*

U.S. Cl. 219—213 **11 Claims**



An anti-icing system is disclosed for radomes in which the radar transparent radome is coated with a thermally conduc-

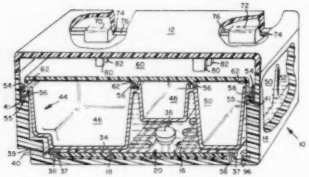
tive material over resistive heating elements. The invention herein described was made in the course of or under a contract or subcontract thereunder, with the Department of the Navy.

3,805,018

PORTABLE FOOD STORAGE AND WARMER CARRYING CASE

Tri Luong, and Jit K. Luong, both of 1477 Mallard Way, Sunnyvale, Calif.

Filed Mar. 12, 1973, Ser. No. 340,222
Int. Cl. A21b *1/52*; **F27d** *11/02*
U.S. Cl. 219—387 **9 Claims**



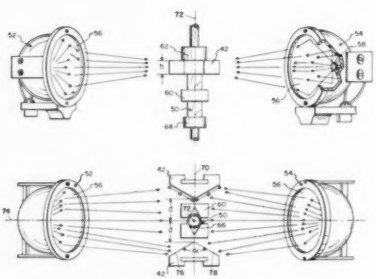
A portable carrying case for carrying food and food warmer apparatus. The case is adapted to store a supply of food and provide a means for warming said food. The case includes a main casing with an internal cavity for storing a supply of heating fluid and a heating element for heating said fluid. A food storage container is positioned within said cavity. Said container forms a storage well within which food may be stored. The exterior walls of said container well are adapted to be at least partially submerged in said fluid such that heat from the liquid may be transferred from the fluid to the interior of the food container storage well.

3,805,019

ENERGY DISTRIBUTION SYSTEM

Joseph A. Gorishek, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Aug. 24, 1972, Ser. No. 283,439
Int. Cl. H05b *1/00*; **G02b** *5/10*; **F21v** *7/09*
U.S. Cl. 219—349 **8 Claims**



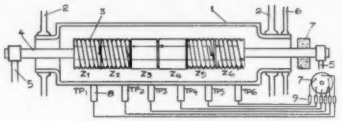
An energy distributing system for uniformly applying radiant energy from two energy sources to a circumferential band of a tubular member. The sources are positioned facing each other and focused upon the tubular member which is positioned midway between them. Plano-convex side reflectors disposed on either side of said tubular member collect diffuse energy and redirect it to the sides of the tubular member to realize the uniform energy distribution. Each of the side reflectors comprises two identical plano surfaces joined together to form an obtuse angle therebetween whose vertex is located on an axis of the tubular member and the optical axes of the sources.

3,805,020

THERMAL TREATMENT OF TEXTILES

Emile Bernard Bates, 11 Barrington Rd., Leicester, England

Filed Dec. 4, 1972, Ser. No. 311,564
Int. Cl. H05b *1/02*
U.S. Cl. 219—469 **13 Claims**



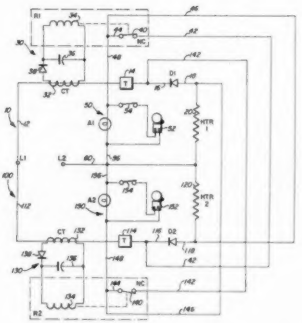
A device for heating and controlling the surface temperature of a cylindrical drum wherein a member is located on the central axis of the drum and in which a plurality of separate heating coils are disposed longitudinally along the length of said drum for the purpose of heating the drum, there being an element for controlling the current to each separate coil and heat sensing devices contacting the outer periphery of the drum and another element controlled by said heat sensitive devices according to the temperature of the outer surface of the drum to vary the current to the heating coils.

3,805,021

FAIL-SAFE HEATING APPARATUS

John W. Griffin, P.O. Box 566, Page, Ariz.

Filed Apr. 30, 1973, Ser. No. 355,868
Int. Cl. H05b *1/02*
U.S. Cl. 219—482 **6 Claims**



Fail safe heating apparatus is disclosed in which a pair of heater elements are interconnected for normal operation to operate on half voltage and each element is connected to an alarm system in case a malfunction and in such case of malfunction, the remaining heater element takes full voltage and thus replaces the malfunctioned element.

3,805,022

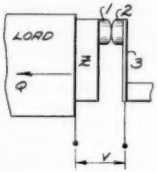
SEMICONDUCTING THRESHOLD HEATERS

Bernard M. Kulwicki, Foxboro, Mass., and George Trenkler, East Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 10, 1972, Ser. No. 296,397
Int. Cl. H05b *1/02*
U.S. Cl. 219—505 **5 Claims**

A heat responsive switch for controlling current flow through a zinc oxide varistor heater. The switch in its broadest form can take the form of a thermostatic device or a PTC

device positioned electrically in series with the varistor circuit and physically heat coupled to the varistor whereby the current conducting properties of the PTC device are determined by the temperature of the varistor.



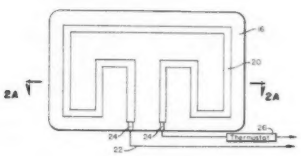
3,805,023
ELECTRICAL HEATING DEVICE HAVING METAL DEPOSITIONS: IN A POROUS ANODIZED METAL LAYER

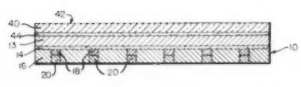
Eugene Wainer, Shaker Heights, and Harold J. Quaintance, Fairview Park, both of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Division of Ser. No. 240,019, March 31, 1972, Pat. No. 3,763,004. This application June 28, 1973, Ser. No. 374,724

Int. Cl. H05b *3/16*

U.S. Cl. 219—543 **6 Claims**





A novel device exhibiting extensive utility for electric heating purposes is comprised in part of a precious metal image being imbedded in the anodized layer produced by electrolytic oxidation of aluminum in which the aluminum sheet is the anode; and plating thereon in only the precious metal image areas, less noble metals. While silver is the preferred precious metal and nickel is the preferred plating material for many applications, other preferred plating materials are combinations of nickel and chromium, cobalt and chromium, and cobalt, nickel and chromium. For some devices, the aluminum backing which carries the anodized layer with the electrical circuit placed thereon, may be removed for the purpose of increasing the temperature of performance of the electrical heating element thus prepared. In other devices, both the aluminum metal and the anodized layer may be removed.

Through the medium of the combination of the novel materials, processes, designs and other modifications described in this specification, items such as food warmers, simmering temperature devices, food cookers, pot warmers and cookers, room and air warmers and heaters, may be produced. In addition, in one and the same piece, combinations of food warmers, food simmers, and food cookers may be produced simply by choosing a proper design of the heater element produced according to the invention.

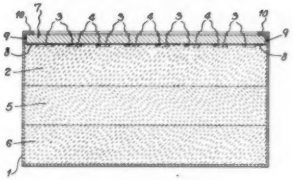
3,805,024
ELECTRICAL INFRARED HEATER WITH A COATED SILICON CARBIDE EMITTER

Stanley V. Joeckel, Wayne, and Richard Zuidema, Bloomingdale, both of N.J., assignors to Irex Corporation, Riverdale, N.J.

Filed June 18, 1973, Ser. No. 371,078

Int. Cl. H05b *3/26*

U.S. Cl. 214—553 **9 Claims**



A high intensity electrical heater for industrial heating, drying or curing applications. The heater comprises a container within which is disposed a heating element and a silicon carbide face sheet having its one side provided with an electrically non-conductive and chemically non-reactive refractory coating or refractory cement, which is adjacent to said heating element.

3,805,025
DOCUMENT HANDLING SYSTEMS

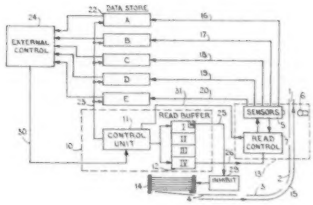
William George Sanigar, Royston, England, assignor to International Computers Limited, London, England

Filed Oct. 16, 1972, Ser. No. 298,047

Claims priority, application Great Britain, Oct. 14, 1971, 47758/71

Int. Cl. G11c *19/00*

U.S. Cl. 235—61.6 H **3 Claims**



A document handling system is described in which a feed path between a document feed hopper and a reader is capable of carrying a number of documents. The feed hopper is actuated to pass documents on to the feed path normally in a continuous succession in response to read instructions and, in order to maintain an association of a fed document with that read instruction which caused it to be fed, the read instructions are passed into a nesting buffer having a number of stages. The instructions are read from one end of the buffer as the documents from the feed path respectively reach the reader. Thus, the reader always withdraws from the buffer that instruction appropriate to the document that is being read. By making the number of stages of the buffer equal to the number of documents that can be carried concurrently on the feed path it becomes possible to associate a feed-inhibit marker with the first buffer stage, so that if this stage becomes empty as a result, for example, of the exhaustion of read instructions,

then feeding is halted. However, the presence of the buffer and the withdrawal of instructions under control of reading ensures that all documents arriving at the reader may be read and correctly associated each with the appropriate instruction.

3,805,026

DATA PROCESSING CARDS

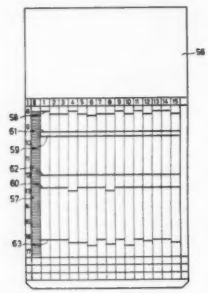
Arthur Anders, Warmbronn, Germany, assignor to Gebruder Anders & Co., Stuttgart, Germany

Filed Aug. 5, 1971, Ser. No. 169,222

Claims priority, application Germany, Aug. 6, 1970, 2039081

Int. Cl. G06r *15/00*; **G07c** *1/06*

U.S. Cl. 235—61.12 R **10 Claims**



A system for registering and evaluating elapsed time comprising a time clock and time cards insertable within said clock. The clock includes means for marking the card on insertion therein with one or more mechanically readable entries in selected positions corresponding to the exact time. The card is read in a sensing mechanism including means for ascertaining the time differential between the entries and means for generating a series of signals corresponding to the time differential. The signals are fed to a counting means for summing the time elapsed between entries.

3,805,027

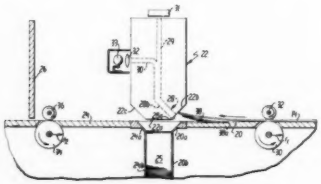
AUTOMATIC CLEANING OF FIBER OPTICS PROBE

Leo L. Azure, Jr., Richland, Wash., assignor to Chatsworth Data Corporation, Chatsworth, Calif.

Filed July 10, 1972, Ser. No. 270,133

Int. Cl. G06k *7/10*; **G08c** *9/06*

U.S. Cl. 235—61.11 E **7 Claims**



The fiber optics probe of a high speed optical mark reader is caused to be wiped by the leading edge of each of successive documents transported to and past the probe for reading thereby eliminating the problem of accumulation of dust, lint or other foreign material on an exposed, sensing end of the probe. A support surface along which a document is transported is formed with an opening therein, in communication with a well. The fiber optics probe is mounted upon a support block disposed above the opening in the support surface. The sensing end of the probe is displaced by a distance just slightly greater than the thickness of a document from the plane of the support surface which extends from either side of the well. An end surface of the optics support block is configured along at least one edge thereof to provide a surface disposed at an angle with respect to the end surface. The sensing end of the fiber optics probe is exposed through the angled surface so that the angled surface of the optics support block is engaged by the leading edge of a document being fed for reading along the surface, prior to engagement of the document's leading edge with the sensing end of the optics probe. Further, a resilient biasing means urges each document as it is being fed, upwardly from the support surface to engage the angled surface of the optics block, thereby wiping the end of the probe. The document being fed is then displaced downwardly due to the angle of the angled surface and passes therebeneath along the end surface of the optics support block, during which the document is no longer in direct contact with the probe.

3,805,028

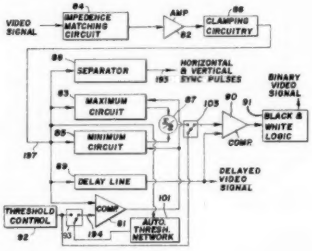
METHODS OF AND APPARATUS FOR DETERMINING THE QUANTITY AND PHYSICAL PARAMETERS OF OBJECTS

Roger Roy Adams Morton, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 835,673, June 23, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 210,278

Int. Cl. G06m *11/02*

U.S. Cl. 235—92 PC **76 Claims**



Apparatus for determining the quantity and/or other physical parameters of any number of regularly or randomly oriented particles, or images or image patterns thereof, of various size and shape lying within a discrete region. A scanning device is swept over the discrete region causing the generation of electrical signals in response to the interception of the boundaries of one or more of the particles. Appropriate logic and electronic circuitry is adapted to receive the initially generated signals, to generate further electrical signals in response thereto and to operate on and with both signals to yield other signals related to the quantity of or the particular particle parameter being sought.

3,805,029

DIGITAL COUNTER

Konstantin Grigorievich Borisov, Zapacny, 3, korp. 2, kv. 21; Vitaly Stepanovich Kuzemko, Trudovykh Rezervov, 56g, kv. 12; Leonid Semenovich Sitnikov, Trodovykh Rezervov, 56g, kv. 22; Stepan Emelyanovich Tokovenko, Zapadny, 3, korp. 1, kv. 59, and Lev Lazarevich Utyakov, Zapadny, 3, korp. 2, kv. 90, all of Kiev, U.S.S.R.

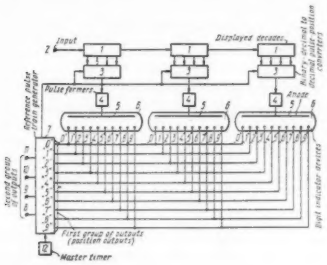
Continuation of Ser. No. 879,416, Nov. 24, 1969, abandoned. This application Mar. 23, 1972, Ser. No. 237,323

Int. Cl. H03k *21/18*

U.S. Cl. 235—92 EA **3 Claims**

A digital counter providing indication of the results of the counting, including a multicolumn counter with indicators

having like digital electrodes which are combined and controlled by a reference pulse generator with ten outputs, such as with a decimal counter. Each decimal column of the displayed counter includes its own converter for a binary decimal code into a pulse position code whose output is connected through an amplifier to a common electrode, such as the anode of the digital indicator. Counting indication is obtained on the parallel principle simultaneously in all the columns, the indicators being actuated when the pulses on the digital and common electrodes coincide.



3,805,030

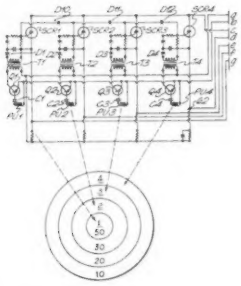
SCORING DEVICES FOR GAMES

Michael Wichinsky, 455 E. Surra Vista Dr., Las Vegas, Nev., and Charles Laughton, 2450 E. 61st North, Tulsa, Okla.

Continuation of Ser. No. 59,991, Sept. 31, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,956

Int. Cl. G06m *3/08*

U.S. Cl. 235—92 GA **10 Claims**



The invention provides a device for automatically keeping the score in a game in which a vibration is established in response to the occurrence of an event to which is assigned a score. Briefly, the device includes means for detecting the vibration, for producing one or more pulses indicative of the occurrence of an event, for counting the pulses and for displaying the score assigned to that event.

3,805,031

COUNT AND STORE SYNCHRONOUS BINARY COUNTER

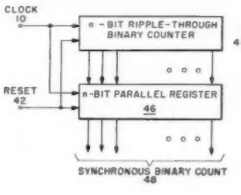
Lawrence M. Leibowitz, Fairfax, Va.; Richard K. Baldauf, Greenbelt, Md., and Thomas T. Street, Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 25, 1972, Ser. No. 292,203

Int. Cl. H03k *21/12*

U.S. Cl. 235—92 EA **2 Claims**

An improvement in a count and store binary counter system wherein the count is available immediately after the reception of the counting clock pulse. Thus, there is no need to wait for a successive ripple-through, and the possibility of erroneous outputs due to an intermediate ripple-through state is eliminated. The circuitry employed to accomplish the invention includesq among other things, a ripple-through binary counter coupled to an n-bit parallel register.



3,805,032

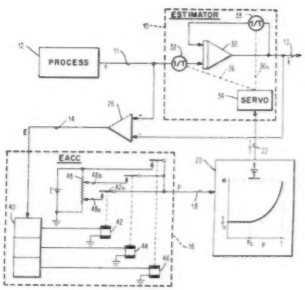
METHOD FOR MINIMIZING THE EFFECTS OF PROCESS DISTURBANCES ON STATE ESTIMATORS

Charles W. Ross, Hatboro, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed Mar. 9, 1972, Ser. No. 233,131

Int. Cl. G05b *13/02*

U.S. Cl. 235—150.1 **16 Claims**

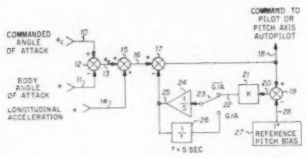


In estimation of a process state from observations based upon process measurements there is utilized a signal which is variable about zero and indicative of the magnitude and direction of change in a state observation resulting from process disturbances, then depending upon a combined function of the magnitude and duration of that signal there is produced another signal indicative of the probability that the process is being subjected to an unexpected disturbance. The influence of previous state observations on the estimate, or in other words, the weighting or time constant involved in the calculation of the state estimate, is varied as a function of that probability so that as the probability increases the weighting increases (the time constant decreases) thus giving the previous observations of the process state decreased value in the determination of the present state estimate.

3,805,033
AUTOPILOT GO-AROUND MODE PITCH COMMAND SIGNAL COMPUTATIONS

Girard M. Manke, Los Angeles; Robert F. Tribuno, Santa Monica; Edwin R. Hattendorf, Mission Viejo, and Theodore J. Schuldt, Jr., Thousand Oaks, all of Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Nov. 20, 1972, Ser. No. 307,912
Int. Cl. G06g 7/78
U.S. Cl. 235—150.22 4 Claims

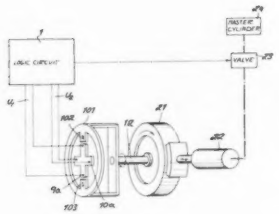

COMMANDED ANGLE OF ATTACK
BODY ANGLE OF ATTACK
LONGITUDINAL ACCELERATION
COMMAND TO PILOT OR PITCH AXIS AUTOPILOT
REFERENCE PITCH BIAS
T = .5 SEC

In a pitch command signal formulation where command error is damped by longitudinal acceleration, negative angular acceleration experienced during throttle retard in flare mode is precluded from effecting a pitch-down command upon go-around mode initiation by inclusion of a nominal pitch-up bias in conjunction with a synchronizer fader in the command signal formulation.

3,805,034
METHOD OF AND APPARATUS FOR MEASURING ANGULAR ACCELERATION

Hans-Christof Klein, Hattersheim, and Gunther Werner, Oberstedten, both of Germany, assignors to Alfred Teves GmbH, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 760,894, Sept. 19, 1968, Pat. No. 3,594,555. This application Jan. 25, 1971, Ser. No. 109,357
Int. Cl. G06g 7/78
U.S. Cl. 235—150.24 10 Claims



In order to measure angular acceleration, two sinewave signals U_1 and U_2 in 90° out-of-phase relationship and of a frequency determined by the angular velocity are generated by a rotating magnetic body, preferably a vehicle wheel, using Hall-effect output elements. These signals U_1 and U_2, and their time derivatives are combined to produce an output corresponding to the second time derivative of angular displacement $\phi(t)$ (i.e. angular acceleration) in accordance with the relationship:

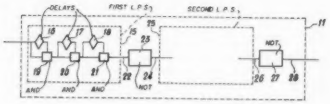
$$\ddot{U}_2 \cdot \ddot{U}_1 - \ddot{U}_1 \cdot U_2 = m^2 \ddot{\phi}(t)$$

where m^2 is a constant. The output controls an antiskid system for the brake.

3,805,035
DEVICE FOR THE LOGICAL ANALYSIS OF TEXTURES

Jean Serra, Fontainebleau, France, assignor to A.R.M.I.N.E.S. Association Pour la Recherche et le Developpement des Methodes et Processus Industriels, Paris, France

Filed June 9, 1971, Ser. No. 151,274
Claims priority, application France, June 10, 1970, 70.21322
Int. Cl. G01b 7/28
U.S. Cl. 235—151.3 5 Claims

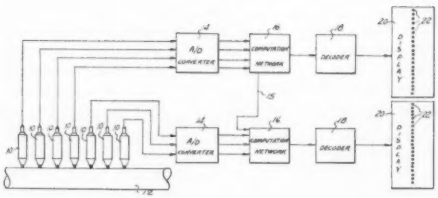


Apparatus for the analysis of heterogeneous textures which forms an electrical image of a medium by such means as a television camera for line-by-line scanning of an image of said medium which is obtained by suitable means such as a microscope. The invention makes it possible to carry out on this primary electrical image by processing in combinations of logic circuits a series of conversions in accordance with predetermined Boolean logical laws which result in new converted electrical images on which it is possible to carry out counts of particles, measurements of particle sizes, determinations of shapes and the like. The Boolean laws employed are of the type in which the values of the electrical image signal corresponding to p points which are geometrically contiguous in the medium are compared with a set of p pre-established values and a new signal which assumes distinct discrete values depending on whether there is concordance or not is formed during the scanning operation. The invention applies in particular to problems of mineralogy, biology, medicine, petrography, metallography and the like.

3,805,036
ARRANGEMENT FOR A COLUMNAR DISPLAY OF VARIATION GAGING SIGNALS

Jimmie A. Michaud, Bellbrook, and Jack R. Stroman, Kettering, both of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed Sept. 5, 1972, Ser. No. 286,500
Int. Cl. G06f 15/46
U.S. Cl. 235—151.32 8 Claims



An arrangement is disclosed producing a columnar display of variation data developed during workpiece gaging operations, including electrical gaging transducers for sensing dimension variations at points on surfaces of a workpiece, an analog to digital converter converting electrical analog gaging signals to digital form, and also including a digital computation network which may be selectively set to compute either the variation in each of a number of gaging signals each produced by an individual gaging transducer, or the maximum variation occurring in all of these individually produced gaging signals, or the difference between the minimum and maximum values of all of the gaging signals produced. These com-

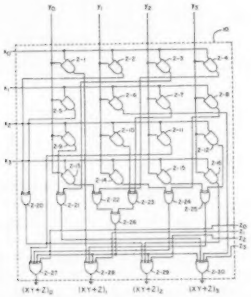
puted values are outputted in the form of digital signals which are decoded so as to activate individual indicator elements in a vertical series of electrically activated indicator elements, with a single indicator element activated in the series for each digital signal level such that the relative vertical position of the activated indicator element corresponds to the relative level of the digital signal to yield a columnar display of the variation data described.

3,805,037

N'TH POWER GALOIS LINEAR GATE

James T. Ellison, Univac Pk. P.O. Box 3525, Minneapolis, Minn.

Filed Mar. 24, 1972, Ser. No. 237,817
Int. Cl. G06f *1/02*
U.S. Cl. 235—152 **5 Claims**



A configuration of two-level Boolean elements for implementing an n'th power Galois linear gate on a single medium scale integrated circuit chip is disclosed. The illustrated configuration includes orthogonally arranged sets of four parallel X input lines and four parallel Y input lines having each of their sixteen intersections intercoupled by a two-input AND gate. The outputs of the AND gates are, in turn, coupled to seven internal EXCLUSIVE OR gates and four output EXCLUSIVE OR gates. A separate Z input line is coupled to each of the four output EXCLUSIVE OR gates for providing the function

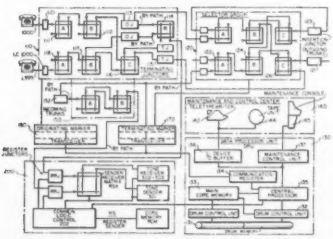
$$G(X)G(Y)+G(Z)=G(XY+Z).$$

3,805,038

DATA HANDLING SYSTEM MAINTENANCE ARRANGEMENT FOR PROCESSING SYSTEM FAULT CONDITIONS

Charles K. Buedel, Wood Dale, and James P. Caputo, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 12, 1972, Ser. No. 270,912
Int. Cl. G06f *11/04*
U.S. Cl. 235—153 AK **16 Claims**



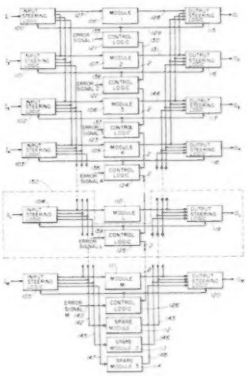
A maintenance arrangement for a data handling system producing data handling signals includes recycling logic circuits for causing the system to reproduce the data handling signals when a false signal condition occurs, and in response to the false signal condition recurring among the reproduced signals, snapshot logic circuits cause the reproduced signals to be stored in the memory of the system for use by servicing equipment in diagnosing the cause of the fault condition. The servicing equipment can also cause the snapshot logic circuits to store in the system memory data handling signals for diagnostic purposes.

3,805,039

HIGH RELIABILITY SYSTEM EMPLOYING SUBELEMENT REDUNDANCY

Jack J. Stiffler, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 30, 1972, Ser. No. 311,010
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AE **26 Claims**



A highly reliable system redundancy concept is disclosed wherein the system is divided into a number of substantially identical subelements wherein spare ones of the subelements may be substituted for failed ones of the subelements. The subelements and their corresponding loads are connected in a predetermined sequence. When one of the normally functioning subelements fails, the subelements following it in the sequence are disconnected from their corresponding loads then reconnected to the next load in the sequence. The last load in the sequence is reconnected to a spare subelement. The concept may be applied in numerous applications such as in defect tolerant computer memories, arithmetic data processing units, or in communications channel applications.

3,805,040

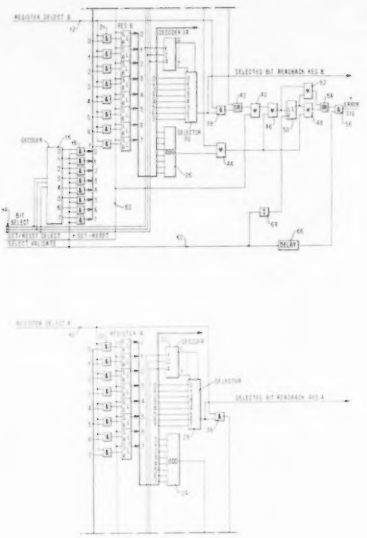
SELF-CHECKED SINGLE BIT CHANGE REGISTER

Robert C. Boden, and Forrest L. Wade, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 4, 1973, Ser. No. 366,821
Int. Cl. G11c *29/00*; **G06m** *3/12*; **G06f** *11/10*
U.S. Cl. 235—153 AP **4 Claims**

An error detecting circuit for checking a single bit change register so as to determine whether or not a change in that register has occurred. The present state of a bit in the register is compared with its desired new state to thereby produce an indication if a change in state is required. The indication is compared with a parity of all the bits in the register and the rela-

tionship of the parity to the change indication is stored in a latch. The output of the latch is compared with a new parity



after the change is effected. If no errors have occurred, the latch output and the new parity will agree.

3,805,041

CIRCUIT FOR CONVERTING ONE CODE INTO ANOTHER CODE

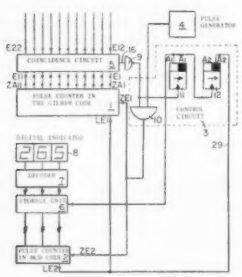
Hans Langheinrich, Offenbach/Main, Germany, assignor to VDO Tachometer Werke Adolf Schindling GmbH, Frankfurt, Germany

Filed Oct. 27, 1971, Ser. No. 192,830

Claims priority, application Germany, Dec. 15, 1970, 2061609

Int. Cl. H03k *13/24*

U.S. Cl. 235—155 **2 Claims**



A code converter having a first counter operating in a first code and a second counter operating in a second code, for use in converting data from the first code to the second code. Coincidence between the bits in the first counter and those in the second indicates correct conversion.

3,805,042

MULTIPLICATION OF A BINARY-CODED NUMBER HAVING AN EVEN RADIX WITH A FACTOR EQUAL TO HALF THE RADIX

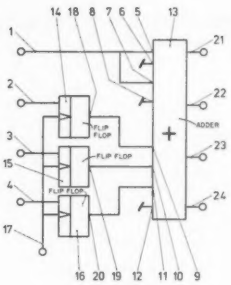
Domenic Melcher, Bonstettenstr. 26, Uster, Switzerland

Filed Aug. 22, 1972, Ser. No. 282,863

Claims priority, application Switzerland, May 24, 1972, 7686/72

Int. Cl. G06f *7/52*

U.S. Cl. 235—156 **1 Claim**



An electronic device for the multiplication of a binary-coded number of a system of numbers having an even radix greater than 2, with the factor equal to half the radix of said system of numbers, wherein the different order bits are simultaneously transmitted through parallel channels and represented consecutively under the control of a clock pulse.

3,805,043

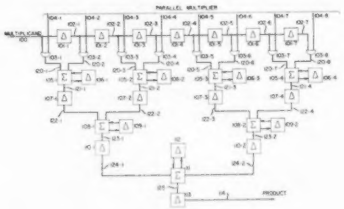
SERIAL-PARALLEL BINARY MULTIPLICATION USING PAIRWISE ADDITION

James Barney Clary, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Oct. 11, 1972, Ser. No. 296,562

Int. Cl. G06f *7/54*

U.S. Cl. 235—164 **12 Claims**



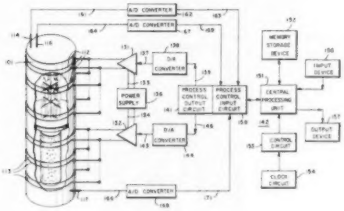
A serial-parallel two's complement binary multiplier circuit featuring a tightly clocked arrangement facilitating the formation of a product signal in an interval of duration shorter than the arrival interval for a serial multiplicand word. Hence, the multiplier circuit is capable of processing butted-word inputs in real time with only minor constraints on word formats. The multiplication algorithm features a pairwise summation of partial products on a least-significant-bit-first basis which gives rise to a tree-like structure of substantially identical circuit modules. Negative multiplicands are treated using a postmultiplication correction circuit.

3,805,044

COMPUTERIZED PROCESS CONTROL SYSTEM FOR THE GROWTH OF SYNTHETIC QUARTZ CRYSTALS

Ranendra K. Bhattacharyya, Kendall Park, N.J.; Angelo Ralph Fiore, Jr., Westville, and David William Rudd, E. Derry, both of N.H., assignors to Western Electric Company Incorporated, New York, N.Y.

Filed Apr. 7, 1971, Ser. No. 131,916
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.12 25 Claims



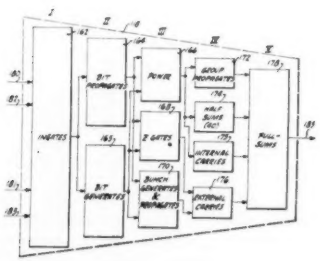
A computer-controlled, hydrothermal, crystal-growing process, for example, for growing synthetic quartz crystals of uniformly high Q. The disclosure includes a mathematical model of the crystal-growing autoclave and an algorithm by which a digital, process-control computer can make adaptive changes to the currents supplied to heating elements associated with the upper and lower zones of the autoclave, during the 25 day growth cycle, to yield a superior crystal of high Q.

3,805,045

BINARY CARRY LOOKAHEAD ADDER USING REDUNDANCY TERMS

Dee E. Larsen, San Jose, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed Oct. 30, 1972, Ser. No. 302,228
Int. Cl. G06f *7/50*
U.S. Cl. 235—175 5 Claims



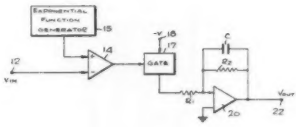
Disclosed is an adder for use in a data processing system. The adder includes five levels of logic circuits for forming bit propagate, bit generate, group propagate, half-sum internal carry and full-sum terms. Additionally, redundancy Z terms are introduced which, together with bunch propagates and bunch generates produce external carries which are combined to generate the full-sum terms. The inclusion of redundancy in terms enables a factoring of terms which reduces the fan-in and fan-out requirements within the adder.

3,805,046

LOGARITHMIC CONVERSION SYSTEM

Haakon T. Magnussen, Jr., Pinole, Calif., assignor to Spectra-Physics, Inc., Mountain View, Calif.

Filed Dec. 11, 1972, Ser. No. 314,128
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 15 Claims



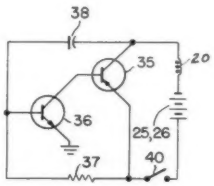
A new logarithmic conversion system takes advantage of the time domain as an intermediate step in converting an analog input signal into an output signal which is a function of the logarithm of the input signal. A reference signal which varies exponentially as a function of time during each of a succession of time intervals is compared with the input signal. The instant when the two signals are equal divides each period into two portions. During one portion the exponential signal is greater than the input signal and during the other portion the input signal is greater than the exponential signal. The two portions of the time period control the supply of an input to an integrating amplifier, whose output may be made to be a function of either the log of the input signal or the log of one over the input signal. The exponential signals are also used to control the amplifier to provide an output which is a function of the log of the ratio of two input signals.

3,805,047

FLASHING JEWEL PENDANT

Robert J. Dockstader, R. D. No. 1, E. Naples St., Wayland, N.Y.

Filed July 6, 1972, Ser. No. 269,507
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 W 2 Claims



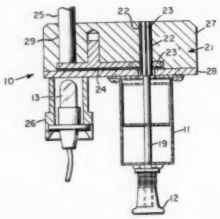
This pendant includes a printed circuit board housed between front and back casing sections. The front, generally cup-shaped section is made of light-transmissive material, and has its open end releasably secured in an annular skirt that surrounds the opaque back section of the casing. The circuit board is disc-shaped, and has on one side a plane surface confronting the front casing section, and on its opposite side a plurality of circuit components which face the back casing section. One of these components is a manually operable switch having a slidable operating button that projects through a slot in the back casing section. Two hearing aid-type batteries are releasably mounted in openings in the circuit board and cause a light, which projects into a central opening in the board, to flash on and off when the switch is closed.

3,805,048

SWITCH

Aaron House Brennesholtz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 14, 1972, Ser. No. 289,146
Int. Cl. B60q 3/04
U.S. Cl. 240—8.16 3 Claims



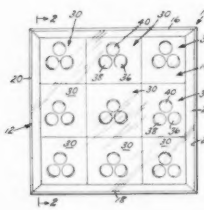
A switch device especially adapted for use in the instrument panel of automobiles is provided, said switch includes a body, support means secured to said body and adapted to engage and support at least one lamp, control means connected to said body and adapted to energize said lamp and cause illumination thereof, light transmitting means secured to said body and adapted to transmit light from said lamp to a remote point when said lamp is illuminated, and means disposed between said support means and said light transmitting means and adapted to be actuated by said control means for varying the amount of light from said lamp to said light transmitting means.

3,805,049

COLOR PATTERN GENERATOR

Bruce Allen Frank, Ithaca, N.Y.; John Arlington Miles, Demarest, N.J., and James C. Ahlstrom, Ithaca, N.Y., assignors to Bruce Allen Frank, Ithaca, N.Y.

Filed May 22, 1972, Ser. No. 255,789
Int. Cl. A47g 33/16; F21p 1/02
U.S. Cl. 240—10 R 15 Claims



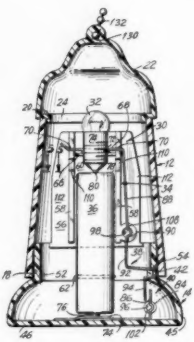
The apparatus produces varying color patterns on an object and comprises a plurality of color producing units connected together in assemblage. Each unit comprises a curved surface which supports a blue, a red, and a green light source. An object is supported a preselected distance from the assemblage by an associated support device. A control device connected to the light sources is adapted to selectively vary the intensity of the light sources of each one of the plurality of color producing units to obtain color patterns.

3,805,050

FLASHLIGHT DEVICE

Norman Spiegel, New York, N.Y., assignor to Nasta Industries, Inc., New York, N.Y.

Filed July 25, 1973, Ser. No. 382,303
Int. Cl. F21l 15/00
U.S. Cl. 240—10 F 13 Claims



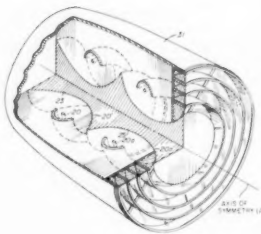
Flashlight device comprising a mounting assembly and a housing with the mounting assembly carrying a flashlight lamp, battery and switch means and being slideable within the housing and with the switch means being adapted for actuation by the housing so that upon outward movement of the mounting assembly relative the housing the lamp will be lit and upon inward movement, the lamp will be extinguished.

3,805,051

CATOPTRIC LENS ARRANGEMENT

Werner R. Rambauske, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed July 2, 1973, Ser. No. 376,016
Int. Cl. F21v 7/14; G02b 5/10
U.S. Cl. 240—41.35 A 3 Claims



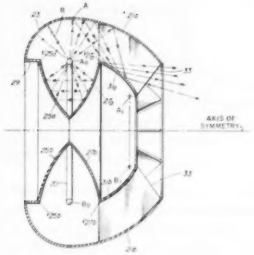
An improved catoptric lens arrangement for forming a composite beam of wave propagated energy emanating from more than one source is shown; in the preferred embodiment each one of two ring sources of light disposed around an axis of symmetry illuminates a different one of a pair of confocal mirrors in a manner that light reflected from such mirrors becomes incident on a beam forming mirror confocal with the pair of confocal mirrors to form a desired composite beam.

3,805,052

BEAM FORMING MIRROR APPARATUS

Werner R. Rambauske, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed July 2, 1973, Ser. No. 376,017
Int. Cl. F21v 7/14; G02b 5/10
U.S. Cl. 240—41.35 C 4 Claims



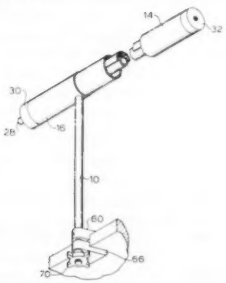
A beam forming catoptric lens arrangement is disclosed in which an extended, or Lambertian, source of light is positioned in coincidence with a focal circle of a first "parellipsoidal" (meaning almost ellipsoidal) mirror and then directed toward a confocal mirror to form an emergent beam of desired shape. Also disclosed is a mirror arrangement to reflect light initially not directed toward the first parallipsoidal mirror through its focal circle to reflect off such mirror. Still further disclosed is a light baffle assembly in the path of light within the disclosed lens arrangement to permit only meridional rays and rays in planes nearly aligned with meridional planes to be present in the emergent beam.

3,805,053

FLUORESCENT FIXTURE

Helmut D. Julinot, 464 Shelbourne St., Toronto, Canada

Filed Jan. 26, 1973, Ser. No. 327,104
Int. Cl. H05b 33/02
U.S. Cl. 240—51.11 R 2 Claims



A longitudinally extending, partially translucent casing for a fluorescent tube contains a shade rotatable about the fluorescent tube controlled by a member exterior to the casing.

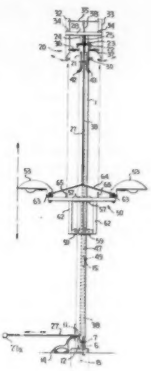
3,805,054

GROUND LEVEL SERVICE RACK FOR POLE-MOUNTED FIXTURES

John H. Wolf, 1710 22nd St., Lake Charles, La.

Filed Dec. 9, 1970, Ser. No. 96,540
Int. Cl. F21v 21/38
U.S. Cl. 240—70 9 Claims

An assembly for ground level installation and servicing of one or more pole-mounted light sources includes a support rack having guide sheaves which ride the pole in response to operation of a hoist cable and pulley arrangement. To slow the fall of the rack in the event of hoist cable failure during raising or lowering, the guide sheaves are urged against the pole by springs which remain in compression independently of hoist cable tension. The rack is latched at the pole top independently of the hoist cable and is releasable at ground level by actuation of a latch line. Light sources are mounted on the rack at a higher elevation than the guide sheaves to cause the sheaves, rather than the sources, to absorb substantially all impact if the rack falls.

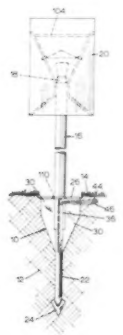


3,805,055

REMOVABLE OUTDOOR LIGHT STRUCTURE

Harold C. Cassey, 136 Main St., Salunga, Pa.

Filed Dec. 13, 1972, Ser. No. 314,798
Int. Cl. F21s 1/10; F21v 21/00
U.S. Cl. 240—84 35 Claims



An outdoor light to illuminate driveways, walks, swimming pools and the like comprising a base member installed in the earth, such as a lawn, flush with the upper surface and having a vertical socket extending downward from the upper end of the member to receive s supporting post member telescopically for support. The telescoping members have co-engageable electric contacts, the contact in the base member being connected by under ground cable above or within the ground to a source of current and the other contact being connected to an electric lamp on the post member. A bracket on the post member supports shades for the electric light and also has a handle to facilitate removal of the post member from the base

socket to permit lawn mowing or other operations free from obstruction by said lights.

3,805,056

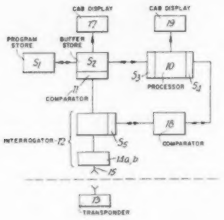
VEHICLE PROGRAM CONTROL SYSTEMS

Michael S. Birkin, Derby, England, assignor to British Railways Board, London, England

Filed May 8, 1972, Ser. No. 250,996

Int. Cl. B61l *3/02*

U.S. Cl. 246—187 B **6 Claims**



A vehicle control system for a vehicle moving along a trackway. The trackway is divided into a plurality of sequential sections, a program means such as a magnetic tape is carried by the vehicle and contains geographical information relating to the trackway and is arranged to transmit the information to control means to control the vehicle in dependence upon said geographical information. Location identifying means are provided at fixed locations in each of said trackway sections to transmit a signal containing the location identity of that section to the vehicle. Means are also provided on said vehicle to ensure that only geographical information corresponding to the particular location identity is passed to the control means.

3,805,057

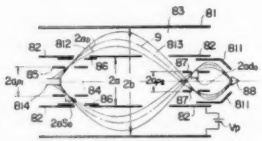
ENERGY ANALYZER OF COAXIAL CYLINDRICAL TYPE

Akira Yanagisawa, Tokyo; Akira Fukuhara, Tachikawa, and Katsuhisa Usami, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 22, 1972, Ser. No. 237,126

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 AE **14 Claims**



A coaxial cylindrical type energy analyzer includes an input slit for admitting charged particles into an energy analyzing field, and a detecting slit for introducing into a detector charged particles which have passed through the analyzing field. The slits are coaxially disposed opposite to each other across.

3,805,058

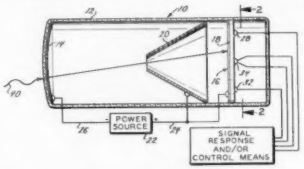
RADIATION SENSITIVE TRANSDUCER

Richard H. Glaenzer, Bridgeton, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 26, 1971, Ser. No. 128,279

Int. Cl. G01j *1/20*

U.S. Cl. 250—203 CT **19 Claims**



A radiation sensitive transducer combining a photocathode and a lateral photoelectric detector to increase the sensitivity and gain, said transducer being operable in several different modes and being particularly useful in tracking applications.

3,805,059

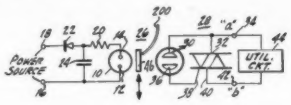
ELECTRICAL SWITCH FOCUSED IN COMBUSTIBLE ATMOSPHERES

Donald C. Long, Yardley, Pa.; Albert C. Hartsough, Willingboro, and Robert F. Sanford, Princeton Junction, both of N.J., assignors to Princeton Electro Dynamics, Inc., Princeton Junction, N.J.

Filed Jan. 10, 1972, Ser. No. 216,527

Int. Cl. H01j *39/12*

U.S. Cl. 250—206 **3 Claims**



An electrical switch adaptable for use in combustible atmospheres in which make and break circuit functions are performed within a compact housing sealed from its environment and under the direction of a movable switch member controlling the transfer of radiant energy, thereby making explosion-proof devices simple and economical to manufacture and install as the movable member may be an arcless component situated external to the insulated housing.

3,805,060

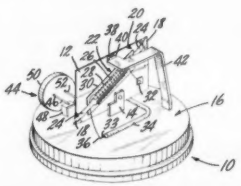
PHOTOELECTRIC CONTROL UNIT FOR SNAP ACTION SWITCH

John A. Way, North Haledon, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Jan. 22, 1973, Ser. No. 325,598

Int. Cl. H01j *39/12*

U.S. Cl. 250—206 **11 Claims**



A photoelectric control unit for electrical load switching in response to light intensity comprising photoelectric means and a thermoelectric snap action switching device with a heater. The unit may be mounted on a conventional automobile

flasher base. The heater in conjunction with the photoelectric means is capable of operation from an A.C. line source. The heater comprises a fine heater wire of relatively high resistance wound around a sleeve which is part of or placed in heat conductive engagement with the pull ribbon of the snap action device, or a film of relatively high resistance deposited upon a form which is placed in heat conductive engagement with the pull ribbon.

3,805,061

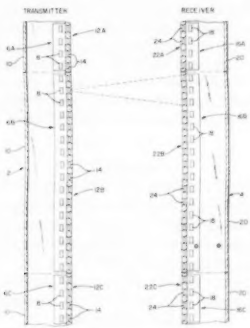
OBJECT DETECTING APPARATUS

Phillipe R. Des Rioux De Missimy, Cambridge; Herman W. Erichsen, Medfield, and Raymond C. Webb, Foxboro, all of Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed Apr. 23, 1973, Ser. No. 353,241

Int. Cl. G08b *13/00*; **H01h** *47/24*

U.S. Cl. 250—209 **15 Claims**



The invention is a system for detecting intrusion of a predetermined area by an object and for operating or terminating operation of an associated apparatus when such intrusion occurs. By way of example, the system may be used to actuate an alarm and/or stop a machine such as a metal stamping press. It consists of a transmitter unit having a plurality of radiant energy sources that are strobed and a receiver unit comprising a plurality of radiant energy detector channels that are activated sequentially in synchronism with strobing of the radiant energy sources, the synchronous operation of the receiver unit being achieved without direct mechanical or electrical connection of the transmitter and receiver unit.

3,805,062

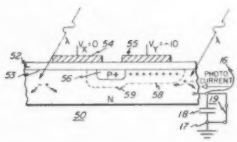
METHOD AND APPARATUS FOR SENSING RADIATION AND PROVIDING ELECTRICAL READOUT

Gerald J. Michon, Waterford, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 21, 1972, Ser. No. 264,804

Int. Cl. H01j *39/12*

U.S. Cl. 250—211 J **39 Claims**



A substrate of semiconductor material of one conductivity type having a plurality of storage sites for storage of radiation generated minority carriers therein are arranged in a plurality of rows and columns. Each of the storage sites includes a row-oriented and a column-oriented conductor-insulator-semiconductor capacitive cell which are arranged so that the depletion regions formed therein in response to application of appropriate voltages in circuit therewith are closely coupled to permit charge stored therein to flow between the cells. Each of the row-oriented conducting members of a row of sites are connected to a respective row line. Each of the column-oriented conducting members of a column of sites are connected to a respective column line. Selective read out of charge stored in a row of sites is accomplished by changing the potential on the row line to cause flow of charge stored in the row-oriented storage elements thereof to flow into the column-oriented storage elements thereof. The read out of charge stored in column-oriented elements is accomplished by changing the potential on each of the column lines in turn to cause injection of carriers stored therein in turn into the substrate. Each such injection produces a respective current flow in circuit with the substrate which is sensed across an integrating capacitance which includes the inherent capacitance of the conducting members in relation to the substrate and the row and column lines of the array. Means are provided for periodically sampling the variation in voltage developed on the integrating capacitance to provide an electrical output varying in time in accordance with the variation in amplitude of the sampled voltages.

3,805,063

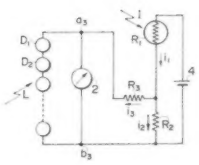
DETECTING DEVICE FOR FOCUSING IN OPTICAL INSTRUMENT

Sanjiro Murakami, Kobe, and Haruhisa Kawata, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Oct. 21, 1971, Ser. No. 190,939

Int. Cl. H01j *39/12*

U.S. Cl. 250—212 **6 Claims**



A plurality of photoelectric elements connected in series to each other are arranged on an image plane through an objective lens of an optical instrument, a variable divided voltage of a separate electric source is loaded across said photoelectric elements connected in series for arranging the output voltage of said photoelectric elements connected in series to each other to hold it near on zero voltage, and a galvanometer connected across said photoelectric elements connected in series detects the minimum voltage for detecting a focusing point of an object on the image plane through the objective lens, by changing the spacing between the lens and the image plane.

3,805,064

RADIATION SENSITIVE INTRUSION DETECTION SYSTEM

Andrew To Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

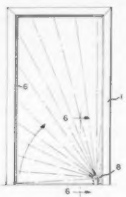
Filed Apr. 27, 1972, Ser. No. 248,337

Int. Cl. G08b *13/00*

U.S. Cl. 250—221 **6 Claims**

The disclosure relates to devices to detect intrusion of a small mass into a doorway or the like. Detection is caused by interruption of a rapidly scanning or other appropriate light beam or radiation source which impinges upon a photovoltaic

or photoconductive tape fastened to the perimeter of the doorway. Interruption of the light beam or its equivalent



causes a momentary reduction in current or voltage emitted by the tape.

3,805,065

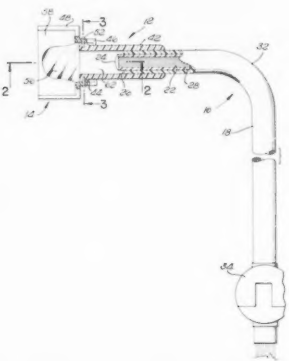
LIGHTING CONTROL SYSTEM

Albert M. Williams, Box 25262, Los Angeles, Calif.

Filed Apr. 13, 1973, Ser. No. 350,851

Int. Cl. G01j *1/32, 3/34;* **G02b** *5/14*

U.S. Cl. 250—226 **6 Claims**



A lighting control system for varying the intensity of a light source. A plurality of the spectrum wavelength bands from the light source are detected. The intensity of each of the bands is measured and an output signal is generated in accordance with the intensity of each of the measured bands. Control feedback means may be provided for varying the intensity of the light source in accordance with the output signal. The spectral wavelength bands of light may be complementary colors so that the intensity as well as the hue of the light can be varied. A light detector can include a directivity-sensitive end cap, the cap transmitting the detected light through a bundle of optical fibers to a plurality of photoconductive cells, with each of the photoconductive cells being sensitive to light in one of the spectral wavelength bands.

3,805,066

SMOKE DETECTING DEVICE UTILIZING OPTICAL FIBERS

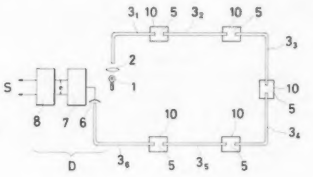
Toichi Chijuma, No. 4-11-9-703, Sendagaya, Shibuya-ku, Tokyo, and Yoshio Morita, No. 3-9-2, Hachobari, Chuo-ku, Tokyo, both of Japan

Filed Aug. 14, 1972, Ser. No. 280,204

Int. Cl. G02b *5/14*

U.S. Cl. 250—227 **3 Claims**

A smoke detecting device utilizing optical fibers is composed of a required number of optical fibers arranged in series alignment with gaps provided therebetween, a light source introducing light rays through one end of the first of the serially arranged optical fiber to the interior thereof, a photo-electric transducer for receiving light rays passed through the optical fibers and delivered from the end of the last of the serially arranged optical fiber to convert the amount of light thus



received into an electric quantity, and a discriminating circuit which produces a predetermined electric signal for indicating the detection of fire whenever the variation of the electric quantity thus obtained exceeds a preset value, whereby any variation in the amount of light due to the intervention of smoke into the gaps between the optical fibers is detected electrically thereby to obtain an electric signal.

3,805,067

METHOD OF SECRETLY MARKING A SURFACE EMPLOYING FISSION PRODUCTS

James Wing, Rockville, Md., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation of Ser. No. 807,083, March 13, 1969. This application Aug. 14, 1973, Ser. No. 389,069

Int. Cl. G21h *5/02*

U.S. Cl. 250—303 **5 Claims**

This invention relates to a method of secretly marking or placing intelligence on the surface of an article in such a manner that the markings are undetectable by ordinary methods. This is accomplished by embedding in the surface to be marked a small amount of recoil fission products from a spontaneously fissioning radioactive isotope. These fission products have a very low radioactivity, cause no radiation damage to the article so marked, are detectable only by very sensitive radiation detectors, and the intelligence is discernible only by a radioautographic means.

3,805,068

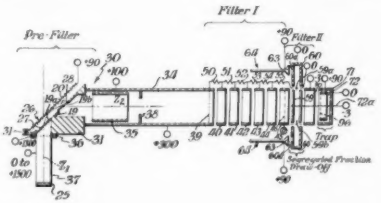
ELECTRON ENERGY ANALYSIS

Jerald D. Lee, 107 Drummond Dr., Highland West, Wilmington, Del.

Continuation-in-part of Ser. No. 99,475, Dec. 18, 1970, abandoned. This application Aug. 3, 1972, Ser. No. 277,571

Int. Cl. H01j *37/26*

U.S. Cl. 250—305 **18 Claims**



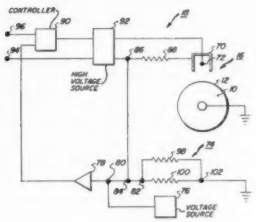
Method and apparatus for energy analysis of a stream of moving electrons by effecting electrostatic segregation and counting of an electron portion having a preselected kinetic energy.

3,805,069

REGULATED CORONA GENERATOR

Donald H. Fisher, Marion, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 18, 1973, Ser. No. 324,628
Int. Cl. G03g *15/02*
U.S. Cl. 250—326 **6 Claims**



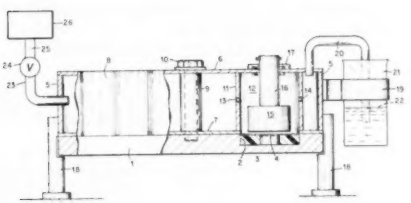
An apparatus in which electrical charging of a charge receiving surface is regulated automatically for maintaining the charge accepted thereon at a substantially uniform level as the temperature thereof varies.

3,805,070

DETERMINATION OF RADON IN AIR

John A. Auxier; Phillip T. Perdue, both of Oak Ridge; William H. Shinpaugh, Knoxville, and John H. Thorngate, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 6, 1973, Ser. No. 377,155
Int. Cl. G01t *1/24*
U.S. Cl. 250—328 **7 Claims**



This invention relates to a device and method for measuring the amount of radon present in the air. A silicon diode detector system operates in helium at atmospheric pressure, and an alpha spectra is obtained that can be analyzed for the radon activity. The invention facilitates radon concentration measurements in the many widely scattered localities in the biosphere where these measurements are of interest, such as in uranium mines, coal mines, and in the lower atmosphere.

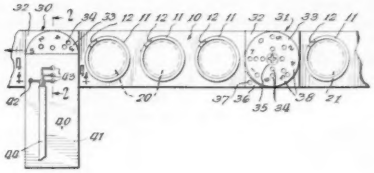
3,805,071

PROGRAMMING APPARATUS FOR AN AUTOMATIC RADIOACTIVITY COUNTING SYSTEM

Richard B. Frank, Deerfield, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Continuation of Ser. No. 789,791, Jan. 8, 1969, abandoned. This application May 8, 1972, Ser. No. 251,510
Int. Cl. G01t *1/20*
U.S. Cl. 250—328 **9 Claims**

Sample group programming apparatus including a binary coded program indicating plug mounted over a first-to-be-counted sample in a sample group and reading apparatus positioned relative to the sample transfer station. A binary coded disc and light conducting arrangement on a support member comprise the program indicating plug and a light source and a



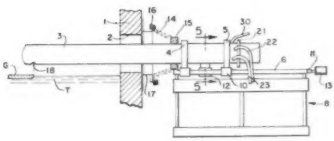
number of light responsive elements comprise the reading apparatus.

3,805,072

METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF THE EDGE OF A RIBBON OF GLASS UNDER PRODUCTION IN A METAL FLOTATION FURNACE

Paul Goerens, Paris, France, and Heinz Pape, Landkreis Aachen, Germany, assignors to Saint-Gobain Industries

Continuation-in-part of Ser. No. 73,024, Sept. 17, 1970, abandoned. This application June 3, 1971, Ser. No. 149,742
Claims priority, application France, Sept. 18, 1969, 69.31756
Int. Cl. G01t *1/16*
U.S. Cl. 250—342 **19 Claims**

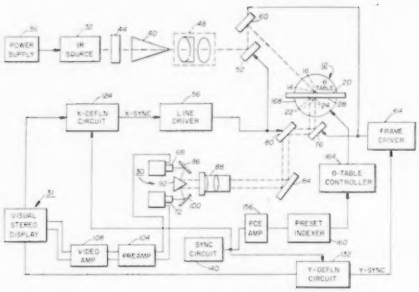


Method and apparatus for the accurate determination optically, of the location at one or more selected positions, of the edge of an incipient ribbon of glass being produced in a metal flotation furnace. A scanning periscopic telescope responsive to infrared rays has its objective end within the furnace adjacent to and above the edge of the ribbon at the selected location. The telescope is mounted for horizontal axial translation in a direction generally transversely of the edge of the ribbon. In normal position the objective is directly over the edge of the ribbon at a location critical to control of the furnace. When for any reason the edge of the ribbon shifts in a direction generally transverse to its direction of motion on the molten metal, the energization of two photoelectric cells incorporated in the telescope, is correspondingly varied. A follow-up motor mechanically connected to axially translate the telescope is thereby correspondingly and uniquely energized to restore the objective to its position directly over the edge of the ribbon. The translation thus effected is repeated at a remote control point or station to thus indicate the exact position of the edge of the ribbon at the critical location, thus enabling precise control of the furance. A number of the instruments may be located at spaced intervals along each edge of the ribbon.

3,805,073
METHOD AND APPARATUS FOR OBTAINING A STEREOSCOPIC THERMAL IMAGE OF INTERNAL AND SURFACE PORTIONS OF AN ARTICLE

Yemmanur Jayachandra, Bolingbrook, and Ronald G. Watson, Joliet, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,632
Int. Cl. G01t 1/00
U.S. Cl. 250—353 **19 Claims**



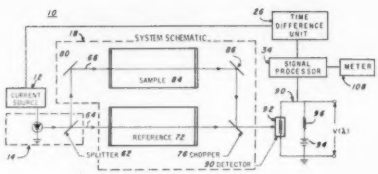
An article, the constituent portions of which have differing thermal heating characteristics, is heated. The thermal response on a surface of the article, which is a thermal image of the constituent portions of the article both internal of and on the surface of the article, is detected with two heat detectors, each of which is focused along an optical path and onto a separate one of two discrete incremental areas on the surface. The optical paths of the detectors are cyclically scanned in unison across the surface in a predetermined pattern to focus successive incremental areas of the surface onto the heat detectors, and a separate electrical signal is generated in accordance with the thermal response detected by each heat detector. Each electrical signal is applied to a separate one of two cathode ray tubes, the electron beams of which are scanned in the predetermined pattern, and in synchronism with the scan of the optical paths of the detectors, throughout their entire raster, to generate on a screen of each tube a thermal image of the constituent portions of the article as detected by one of the detectors. After each scan through at least one cycle, the article is rotated an incremental amount about an axis to cyclically change the parallax between the optical paths of the detectors and the second surface. In this manner, the image on one of the screens is a left hand thermal image, and the image on the other screen is a right hand thermal image, of the constituent portions of the article, which together form a stereoscopic thermal image of the constituent portions of the article.

3,805,074
SPECTRAL SCAN AIR MONITOR

Kent McCormack, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,401
Int. Cl. G01j 3/08
U.S. Cl. 250—355 **8 Claims**

An apparatus for monitoring air pollution sources, such as, for example nitrous oxide (NO), sulphur dioxide (SO_2), or sulphur trioxide (SO_3) is disclosed. The apparatus includes a tunable diode laser as a transmitter of infrared energy. The diode laser is tuned in a periodic fashion such that the laser light emission wavelength is scanned through an absorption line of a pollutant gas. The tuning effect is produced by driving the diode laser with a current which is the sum of a d.c. and an a.c. current. The laser energy is transmitted to a beamsplitter. The beam-splitter divides the energy between a sample path and a reference path. The sample path may be an open air path or include a sample cell; the reference path contains a cell having a known concentration of the pollutant gas being monitored. A chopper is provided to alternately sample the radiation passing the sample and reference cells to a detector

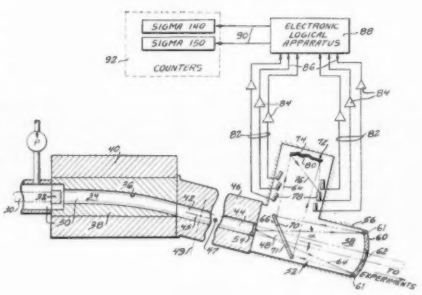


which produces an a.c. signal whose peak to peak difference value contains the information of the difference in concentration levels of the contaminant in the reference and sample paths. A feedback circuit is provided to feed-back a d.c. current, equivalent to the time difference between the offset in the center point of the diode emission and the center of the contaminant absorption line, to the laser drive circuit to provide automatic lock onto the center of the contaminant absorption line.

3,805,075
IMAGE-DISSECTING CHERENKOV DETECTOR FOR IDENTIFYING PARTICLES AND MEASURING THEIR MOMENTUM

Arthur Roberts, Lombard, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 13, 1973, Ser. No. 340,808
Int. Cl. G01t 1/22
U.S. Cl. 250—366 **10 Claims**



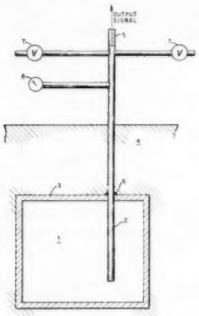
Charged atomic and subatomic particles in a beam are classified as to type and momentum range by a detector having a beam bender, a Cherenkov medium and a segmented optical system for generating electrical pulses corresponding to illumination of predetermined regions of Cherenkov circles. Analysis of the illuminated regions by electronic logic provides identifying signals for given particles and given ranges of momentum.

3,805,076

NOBLE GAS SCINTILLATOR FOR MEASURING NEUTRON FLUX

Edward E. Carroll, Jr., Gainesville, Fla., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 8, 1973, Ser. No. 358,446
Int. Cl. G01t 1/20
U.S. Cl. 250—365 3 Claims



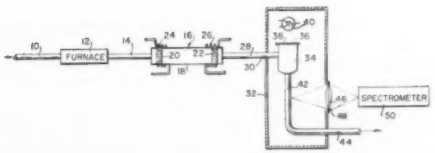
For measuring neutron flux in a power reactor, a long slender gas-containing tube is built into the reactor. The tube acts as a light pipe for scintillations from a secondary gas mixed with the first noble gas. The secondary gas produces a charged particle upon absorption of a neutron, which particle passes through the noble gas causing the emission of ultraviolet radiation. The tube is viewed from the upper open end by a photomultiplier. A variety of secondary gases may be used for neutron spectrum analysis and the device may also be used as a gas pressure thermometer.

3,805,077

METHOD AND APPARATUS FOR DETECTING THE PRSENCE AND QUANTITY OF MERCURY IN A SAMPLE OF ORGANIC MATERIAL

Arthur P. D'Silva, and Velmer A. Fassel, both of Ames, Iowa, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 12, 1973, Ser. No. 340,628
Int. Cl. G01n 23/00
U.S. Cl. 250—372 12 Claims



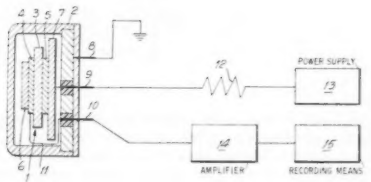
A method and apparatus for detecting the presence and quantity of mercury in a sample of organic material, by heating the material to release the mercury into a flowing atmosphere of argon containing nitrogen, adsorbing the mercury on a mercury-wettable metal filter and revaporizing the mercury into the flowing atmosphere which is then irradiated to excite the mercury to emit its characteristic spectral lines which are detected and analyzed.

3,805,078

DEVICE WITH A DIAMOND DETECTOR FOR NEUTRON DETECTION

Stanislav Fedorovich Kozlov, Moscow, U.S.S.R., assignor to Fizichesky Institute Imeni P.N. Lebedeva Akademii Nauk USSR, Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 863,614, Oct. 3, 1969. This application Jan. 14, 1972, Ser. No. 218,003
Claims priority, application U.S.S.R., Oct. 3, 1968, 1274217. The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.
Int. Cl. G01t 3/00
U.S. Cl. 250—390 4 Claims



A device for neutron detection, comprising in combination with a radiator, a nuclear radiation detector on the basis of a diamond crystal plate with contacts formed at the opposite sides thereof, one of the contacts is made blocking in relation to charge carriers and is provided with the radiator, while the opposite contact is made of a material capable, in conjunction with diamond, of injecting charge carriers under the influence of an applied electric field.

3,805,079

APPARATUS FOR DETERMINING THE CARBON CONTENT OF A FERROUS MATERIAL DURING STEEL MAKING

Michael J. Higatsberger; Karl Rumpold, both of Vienna, and Franz Viehbock, Maria Enzersdorf-Sudstadt, all of Austria, assignors to Osteereichische Studiengesellschaft Fur Atomeneegie Ges. m.b.H., Vienna, Austria

Division of Ser. No. 76,997, Sept. 30, 1970. This application Mar. 19, 1971, Ser. No. 139,230
Int. Cl. G01n 23/10
U.S. Cl. 250—392 8 Claims

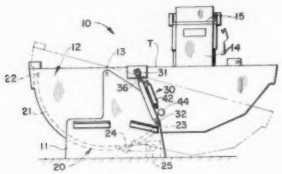
Apparatus for determining the carbon content of liquid ferrous material during the production of steel, comprising a crucible container adapted to hold said material, means for producing a neutron flux of predetermined energy, guidance means for directing said neutron flux onto said material and measuring means for measuring the gamma radiation emitted from said material upon impingement of said neutron flux thereon.

3,805,080

SAFETY LOWERING DEVICE FOR TILTABLE X-RAY TABLE

Norman J. Yager, Euclid; Warren A. Poole, South Russell, and Timothy H. Arndt, Cleveland, all of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Sept. 14, 1971, Ser. No. 180,360
Int. Cl. H01j 37/20
U.S. Cl. 250—439 **18 Claims**



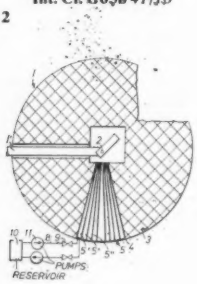
An X-ray table having a hydraulic safety lowering device connected between a tiltable table body and a stationary base. Flow control means permits unrestricted fluid flow between opposite sides of a piston during upward movement of the platform, and provides restricted fluid flow during downward movement of the platform.

3,805,081

COLLIMATOR FOR HIGH ENERGY RADIATION

Rolf Barthel, Frankfurt am Main, and Bernd-Peter Offermann, Hamburg, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed Apr. 17, 1972, Ser. No. 244,554
Claims priority, application Germany, Apr. 16, 1971, 2118426
Int. Cl. G03b 41/16
U.S. Cl. 250—512 **5 Claims**



A plurality of cells are disposed in an aperture insert which is receivable in an aperture of a collimator for high energy radiation. The cells can be selectively filled with radiation shielding material.

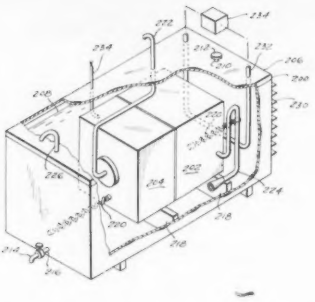
3,805,082

PORTABLE POWER ACCESSORY WITH WATER BATH FOR NOISE SUPPRESSION

Jerome L. Murray, 652 First Ave., New York, N.Y.

Continuation-in-part of Ser. No. 4,833, Jan. 22, 1970. This application Mar. 13, 1972, Ser. No. 234,237
Int. Cl. H02p 9/04
U.S. Cl. 290—1 **7 Claims**

A portable power accessory wherein an internal combustion engine coupled to an alternator or generator are housed in a fluid-tight housing and submerged in a tank of water. The water around the motor-generator unit acts as a muffler for the internal combustion engine as well as providing a safety barrier and acting as a cooling medium for the internal combustion engine. Appropriate air intake means are provided to supply air to the internal combustion engine and a suitable wiring harness extends from the generator unit to supply remote electrical accessories with electrical energy.

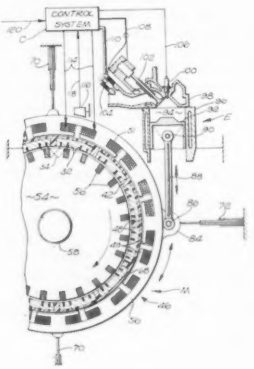


3,805,083

VIBRATING-TO-ROTARY ENERGY CONVERTER

Mihai C. Demetrescu, 17761 Palmento Way, Irvine, Calif.

Filed Apr. 13, 1973, Ser. No. 351,059
Int. Cl. H02p 9/04
U.S. Cl. 290—1 **14 Claims**

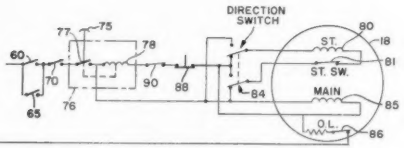


A conversion system is disclosed utilizing certain a. c. electrical motor principles to provide rotary energy from a source of reciprocating energy. The illustrative configuration includes a rotor of the type employed in induction motors. Outside the rotor is a concentrically mounted stator for supporting the structure and controlling magnetic flux patterns. Also in concentric relationship with the rotor and outside the stator is a vibrating element, for supplying alternating magnetic flux. That is, the vibrating element carries magnetic poles and field windings so that as it oscillates, an alternating magnetic flux is generated through the stator to develop rotary energy on the rotor. In the illustrative embodiment, the vibrating or oscillating structure is coupled to an internal-combustion resonance engine. Specifically, the oscillating structure is carried on springs and connected to the reciprocating piston of the engine. Control means is provided for actuating the engine in accordance with the amplitude of oscillations and current power demands.

3,805,084
COMPACTOR CYCLE CONTROL

Victor F. Schuerman, and Einar O. Engebretsen, both of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed Aug. 11, 1972, Ser. No. 279,984
Int. Cl. H02b *1/24*
U.S. Cl. 307—112 **6 Claims**

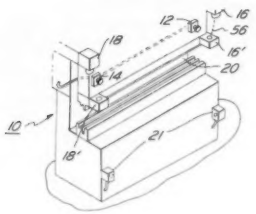


A compacting machine has a reversible motor drive for a ram movable in a compacting stroke and a retracting stroke. Directional controls prepare the drive for a compacting stroke when the ram is at its fully retracted starting position and prepare the drive dor a retracting stroke as soon as the ram leaves the starting position. A cycle ending switch is momentarily actuated as the ram nears the end of its retracting stroke to cut off power from the drive before the directional switch is reversed at the starting position in preparation for the next operating cycle.

3,805,085
SAFETY SYSTEM AND METHOD

Joseph J. Andrews, Lower Merion Township, Pa., assignor to Keystone Automated Equipment, Co., Philadelphia, Pa.

Filed May 30, 1973, Ser. No. 365,216
Int. Cl. H01h *19/14*
U.S. Cl. 307—115 **10 Claims**



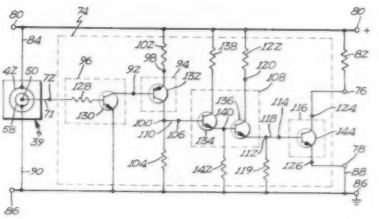
A safety system and method for operating a machine by an operator. The operator must initially interrupt a light beam with both hands to activate a first switch. This initiates a first time delay interval. Within this first time interval the operator must strike two palm button switches before the machine will operate.

3,805,086
TOUCH SENSITIVE ELECTRONIC SWITCH

Willis A. Larson, and Arthur Kimmell, both of Albuquerque, N. Mex., assignors to Magic Dot, Inc., Minneapolis, Minn.

Continuation of Ser. No. 199,384, Nov. 16, 1971, abandoned. This application June 23, 1972, Ser. No. 265,442
Int. Cl. H01h *3/00*
U.S. Cl. 307—116 **19 Claims**

A touch sensitive electronic switch which has no moving parts and is actuated by the skin resistance of an operator causing a lowering of D.C. resistance across the switch is disclosed. The electronic switch, in the preferred embodiment shown, includes three electrodes laterally spaced and arranged with respect to each other upon an insulator. The second electrode is laterally spaced and insulated from the first electrode and arranged around and about the first electrode with the top surface of the second electrode rising above the level of the top surface of the first electrode. The third electrode is laterally spaced and insulated from both the first and second electrodes to provide a conductive electrical shielding electrode between the first and second electrodes. The first and second electrodes are exposed to the finger of an operator upon the top surface of the insulator in a manner that

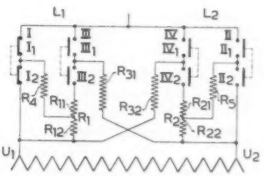


the operator's finger touching first the second electrode and then the first electrode allows a direct current path to be set up laterally between the first electrode and the second electrode to thereby provide a lowering of the D.C. resistance across the electronic switch. When the operator's finger is removed, the shielding effect of the third electrode prevents any leakage currents from flowing between the first electrode and the second electrode and establishing such a direct current path.

3,805,087
TAP-CHANGING TRANSFER SWITCH HAVING SERIES BREAKS AND MEANS FOR CONTROLLING THE RECOVERY VOLTAGE BETWEEN BREAKS

Wolgang Breuer, and Alexander Bleibtreu, both of Regensburg, Germany, assignors to Maschinenfabrik Reinhausen Gebeu der Scheubeck K.G., Rogensburg, Germany

Filed May 31, 1973, Ser. No. 365,642
Claims priority, application Germany, June 20, 1972, 2230007
Int. Cl. H01l *29/02*
U.S. Cl. 307—136 **2 Claims**

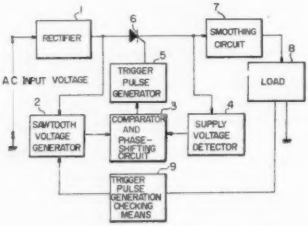


A tap-changing transfer switch for tapped regulating transformers is provided with switch means capable of forming series breaks in each of its load current carrying circuits. The transfer switch is further provided in addition to switch-over resistors with resistor means for equalizing the recovery voltage appearing across each of its series breaks. This is achieved without the provision of any auxiliary switching means for switching the voltage distribution resistors.

3,805,088
POWER SUPPLY CIRCUIT

Yasuhiro Sugihara, Katano, and Mitsuo Isobe, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 7, 1972, Ser. No. 304,541
Claims priority, application Japan, Nov. 8, 1971, 46-89334
Int. Cl. H02h 7/00
U.S. Cl. 307—150 5 Claims

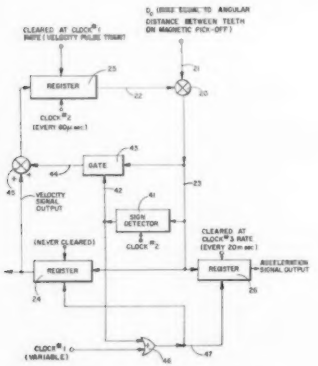


A power supply circuit for use in television receiver sets and the like and of the type where an a-c source voltage is rectified for impression upon a thyristor whose output is smoothed for coupling to a load. The firing phase of the thyristor is normally controlled in accordance with the voltage supplied to the load for voltage stabilization. In addition, the thyristor is rendered into the non-conduction state upon detection of an excessive load current due to an accident in the load, whereby the otherwise possible rupture of many circuit elements due to excessive current may be reliably prevented. When the normal state of the load has been restored, the power supply circuit may be brought into its normal operative state in a simple way.

3,805,089
DIGITAL ACCELERATION MEASUREMENT DEVICE

James E. Rau; Rogell Van Wyk, both of Anaheim, and George A. Watson, Tustin, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1972, Ser. No. 317,993
Int. Cl. H03k 5/18
U.S. Cl. 307—233 9 Claims

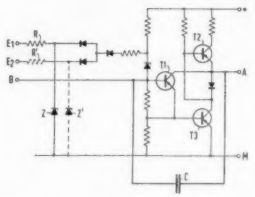


Digital acceleration sensor comprising pulse rate responsive means for determining the rate of change of a detected variable pulse rate, the pulse rate representing a velocity state or rate of change of interest.

3,805,090
CIRCUIT FOR ATTENUATING SPURIOUS SIGNALS

Walter Kaiser, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 2, 1971, Ser. No. 149,247
Claims priority, application Germany, June 18, 1970, 2029901
Int. Cl. H03k 19/36
U.S. Cl. 307—215 6 Claims

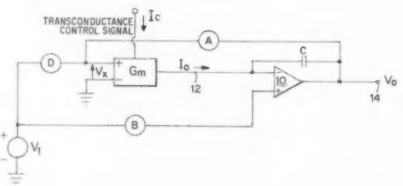


To suppress spurious signals, the collector electrode and the base electrode of a transistor is bridged by an integrating capacitor. Spurious signals on the input lead which are above a threshold level are diverted by a threshold member such as, for example, a Zener diode, to the reference potential lead.

3,805,091
FREQUENCY SENSITIVE CIRCUIT EMPLOYING VARIABLE TRANSCONDUCTANCE CIRCUIT

Dennis P. Colin, Beverly, Mass., assignor to ARP Instruments, Inc., Newton Highlands, Mass.

Filed June 15, 1972, Ser. No. 263,177
Int. Cl. H03b 1/04
U.S. Cl. 307—295 19 Claims



The circuit of the present invention is preferably used in electronic musical instruments such as an electronic organ or music synthesizer, and basically comprises a transconductance means, an integrator, and feedback means intercoupling an output of the integrator and an input of the transconductance means. The transconductance means includes a differential amplifier and current reflector and the integrator comprises an operational amplifier and reactance means. The fundamental circuit is primarily used for voltage controlled filtering and may be easily modified to provide either a high pass filter network, a low pass filter network, or a phase shift network with constant gain.

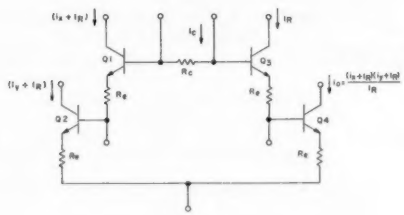
3,805,092
ELECTRONIC ANALOG MULTIPLIER

Howard K. Henson, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Filed June 25, 1973, Ser. No. 373,447
Int. Cl. H03k 17/00
U.S. Cl. 307—229 3 Claims

An electronic analog multiplier is disclosed utilizing four transistors connected in a loop. Input signals to be multiplied are applied to the collector electrodes of two of the transistors

to establish collector currents therein; a biasing signal is applied to the collector electrode of the three transistors to establish a collector current. The establishing of the collector currents in three of the four transistors connected in the loop results in the biasing of the fourth transistor which then provides an antilog function to develop a collector current proportional to the product of the input signal currents. Variations of the transistor gains among the transistors connected in the loop induces a linear error which may readily be corrected



by adjusting input resistances in the input signal paths. A compensation resistor is connected between the base electrodes of the first and fourth transistors of the loop; the compensation resistor is provided with a compensation current derived from the collector electrode of the fourth transistor. The compensation current is adjusted by setting the value of the compensation resistor, which provides a correction for the error in the circuit created by the ohmic resistances of the transistor emitters.

3,805,093

TRANSISTOR CIRCUIT

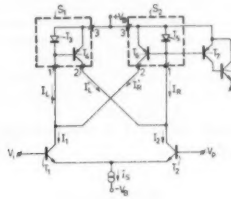
Andreas Marie Hodemaekers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,781

Claims priority, application Netherlands, Apr. 29, 1971, 7105838

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 R **17 Claims**



A transistor circuit, in particular a trigger circuit, comprising two input stages for converting input voltages into control currents. Provision is further made of two current mirrors for taking up the control currents, each input stage being connected to an input terminal of one of the current mirrors and to an output terminal of the other of the current mirrors. By chosing the product of the mirror ratios of the current mirrors greater than unity a trigger circuit having satisfactory supply voltage suppression is obtained.

3,805,094

DRIVING CIRCUIT FOR A SWITCHING TRANSISTOR

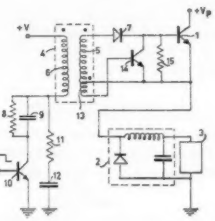
Luciano Orlando, Milan, Italy, assignor to Honeywell Information Systems Italia, Calusa, Italy

Filed Jan. 19, 1973, Ser. No. 324,942

Claims priority, application Italy, Jan. 28, 1972, 19883/72

Int. Cl. H03k *17/00*

U.S. Cl. 307—300 **9 Claims**



A transformer driving circuit for a floating-voltage switching device such as those employed in driving circuits for magnetic memories is provided. The circuit includes a driving transformer provided with an auxiliary winding and an auxiliary switching transistor driven by said winding to short circuit the base and emitter of the power switching transistor.

3,805,095

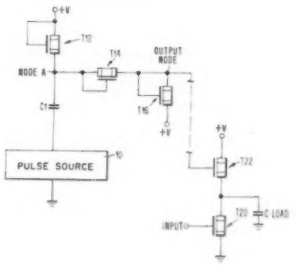
FET THRESHOLD COMPENSATING BIAS CIRCUIT

James M. Lee, Wappingers Falls, and George Sonoda, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,266

Int. Cl. H03k *3/26*

U.S. Cl. 307—304 **10 Claims**



Disclosed is a bias circuit that eliminates the adverse effect of threshold voltage variations on field effect transistor (FET) circuit performance. The gate electrode of a load device is maintained at one threshold level above the supply potential regardless of threshold voltage variations, optimizing the linear impedance characteristics of the load device and the power/performance characteristics of the resultant FET circuit.

3,805,096

CODED TOUCH MULTIFUNCTION TOUCH CONTROL SWITCH CIRCUITRY

William F. Hamilton, II, 1528 C. Miramar Beach, Santa Barbara, Calif.

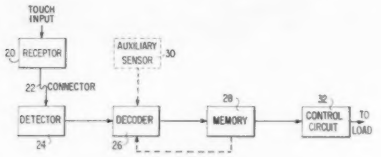
Filed Jan. 22, 1973, Ser. No. 325,131

Int. Cl. H03k *5/153*

U.S. Cl. 307—308 **26 Claims**

The present invention provides a touch control switch circuit capable of responding to coded touch inputs, i.e., touch

inputs of different duration or particular sequences of touch inputs, to selectively control the operation of a load device. The touch control switch circuit is particularly useful for



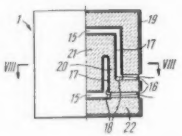
operating a household lighting fixture. The touch control switch circuit allows an operator to selectively control the intensity or timing of operation of the lighting fixture by applying predetermined touch code inputs to the circuit.

3,805,097

PIEZOELECTRIC ACCELEROMETER

Vladimir Vladimirovich Yanchich, Krasnodarskaya 78, kv. 62; Oleg Pavlovich Kramarov, ul. Stanislavskogo, 161, kv. 1; Vladimir Vasilievich Zalessky, Budenovsky prospekt 96/132, kv. 122, all of Rostov; Boris Anisimovich Kravtsov, Verkhne-Pervomaiskaya ul. 65, korpus 2, kv. 9, Moscow, and Jury Mikhailovich Martynenko, 2 Krasnodarskaya ul. 80/2, kv. 79, Rostov, all of U.S.S.R.

Filed Aug. 7, 1972, Ser. No. 278,656
Int. Cl. G01p *15/08*; **H01v** *7/00*
U.S. Cl. 310—8.4 **6 Claims**



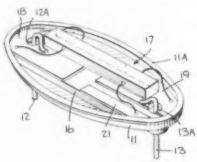
A piezoelectric accelerometer with electrostatic screening having at least one piezoelectric element with electrodes provided between the inertial mass and the foundation. Said accelerometer is fashioned as a single monolithic block made of a piezoelectric material divided, by hollows, into regions serving as the foundation, piezoelectric element, and inertial mass, said hollows accomodating electrodes therein.

3,805,098

QUARTZ-CRYSTAL MOUNTING ASSEMBLY

John J. Carpenter, Lynbrook, and Charles C. Spreckles, Huntington, both of N.Y., assignors to Bulova Watch Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 204,177, Dec. 2, 1971. This application Jan. 23, 1973, Ser. No. 325,996
Int. Cl. H01v *17/00*
U.S. Cl. 310—9.1 **6 Claims**



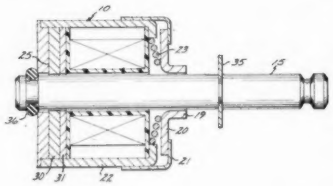
A crystal mounting assembly provided with a hermetically sealed and evacuated envelope in which a crystal unit is supported on a rigid ceramic substrate by means of strain-free leads connecting the crystal electrodes to contacts plated on the substrate. The substrate contacts are connected to terminal pins projecting from the envelope, the inner ends of the pin passing through holes in the substrate and then being crooked before being joined to the contacts to provide a resilient suspension for the substrate whereby the lead-supported crystal is mechanically isolated from and unaffected by stresses imposed on the pins and whereby the pins are isolated from the vibrating crystal.

3,805,099

LINEAR ACTUATOR

Samuel T. Kelly, Torrance, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 9, 1973, Ser. No. 349,292
Int. Cl. H02k *41/02*
U.S. Cl. 310—12 **9 Claims**



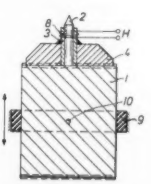
A linear actuator of the solenoid type comprising a primary coil adapted to be powered by an A.C. electrical source, a cylindrical magnetic shield surrounding the exterior of the coil, a magnetic central core member extending through the interior of the coil, an end disc disposed at one end of the cylindrical shield and an armature including a central opening to receive the core member spring biased to form an air gap which when closed completes a magnetic circuit including the core member, the shield and the end disc. Disposed within the interior of the shield is a secondary coil, induced by the change in the magnetic flux generated by the primary coil during each electrical cycle, shielded from the primary coil by a saturating or shading disc. Thus as the primary coil is energized the armature is pulled in closing the magnetic circuit and drawing the centrally located core member towards any side of the central opening thereof to advance the core member along with the armature. When the signal in the primary coil decays the secondary coil is induced to magnetically latch the core member thereto while the armature is released to advance along the core member.

3,805,100

PIEZOELECTRIC RECORD CUTTING STYLUS

Hans-Joachim Klemp, and Horst Redlich, both of Berlin, Germany, assignors to Ted Bildplatten Aktiengesellschaft Aeg-Telefunken, Teldec, Zurich, Switzerland

Filed Jan. 17, 1973, Ser. No. 324,407
Claims priority, application Germany, Jan. 22, 1972, 2203095; Jan. 22, 1972, 7202409
Int. Cl. H04r *17/00*, *17/02*; **G11b** *3/00*
U.S. Cl. 310—8.3 **13 Claims**



For cutting mechanical recordings in a flat record carrier with a recording frequency of 20 to 200–400 kHz, a piezoelec-

tric transducer arranged to undergo longitudinal oscillations to drive a cutting stylus, the transducer being constituted by a body of an amorphous piezo oxide composed of a mixture of oxides of lead, zirconium and titanium and having a coupling coefficient of at least about 0.6 and a mechanical resonant frequency above the highest frequency to be recorded, the transducer being connected to an electric signal supply circuit having a high electrical resistance such that the combination of the high electrical resistance and the high coupling coefficient of the transducer results in a maximum resonance gain in the transducer response of no more than 10 db.

3,805,101

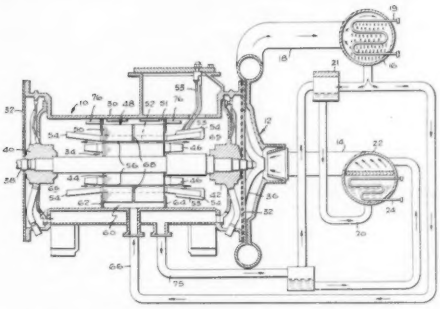
REFRIGERANT COOLED ELECTRIC MOTOR AND METHOD FOR COOLING A MOTOR

Joseph W. Purman, Milwaukee, Wis., assignor to Litton Industrial Products, Inc., Milwaukee, Wis.

Filed July 3, 1972, Ser. No. 268,481

Int. Cl. H02k *9/00*

U.S. Cl. 310—54 **17 Claims**



An electric motor cooled by a fluid such as a liquid refrigerant having a chamber between a stator assembly and a casing for cooling the stator assembly and for directing the coolant into radial passages in the stator assembly. Coolant flows through radial passages in the stator assembly and subsequently into a gap between the rotor assembly and the stator assembly and out of the motor. A method of cooling an electric motor wherein the direct contact of the coolant with internal portions of the stator assembly increases the efficiency of the cooling process.

3,805,102

FASTENING ARRANGEMENT FOR MOTOR STATOR SUPPORT

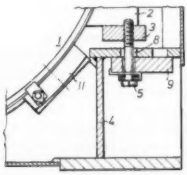
Ulrich Vockler, Berlin, Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed Nov. 15, 1972, Ser. No. 306,726

Claims priority, application Germany, Nov. 18, 1971, 2158209

Int. Cl. H02k *5/00*; **F16f** *16/00*

U.S. Cl. 310—91 **5 Claims**



A fastening arrangement for a stator packet of an electrical machine which includes a housing and bearing cam surfaces which support the stator packet. The arrangement includes a plurality of foot-type protrusions extending outwardly from the stator packet toward the housing. The protrusions are free of any contact with the housing. Tension screws and pressure screws extend between the housing and the protrusions for fixing the stator packet to the housing.

3,805,103

COMMUTATOR FOR A SMALL ELECTRODYNAMIC MACHINE

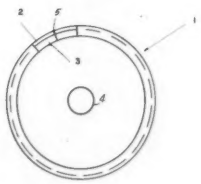
Jan Maarten van de Griend, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,774

Claims priority, application Netherlands, Sept. 18, 1970, 7013888

Int. Cl. H02k *13/04*

U.S. Cl. 310—237 **5 Claims**



A commutator for a small electric motor wherein the commutator segments are made by stamping same from a metal strip or a metal sheet provided with a contact layer which consists of an alloy of noble metals rolled on to the substrate metal. In a preferred embodiment, the alloy comprises 70 ± 1 percent of gold, 20 ± 1 percent of silver, 10 ± 1 percent of copper, and an impurity content in the form of other metals which is at most 0.05 percent.

3,805,104

LOW INERTIA ROTOR FOR DYNAMO ELECTRIC MACHINES, AND METHOD OF MAKING THE SAME

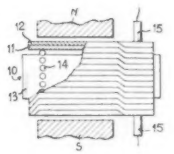
Pierre Margrain, and Gerard Lacroux, both of Malakoff, France, assignors to Etablissements E. Rajonot, Malakoff, France

Division of Ser. No. 52,595, July 6, 1970, Pat. No. 3,694,907. This application July 27, 1972, Ser. No. 275,565

Claims priority, application France, July 10, 1969, 69.23496

Int. Cl. H02k *1/22*

U.S. Cl. 310—266 **12 Claims**



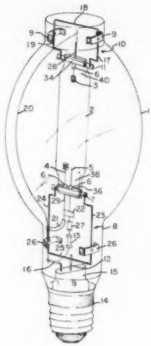
A hollow insulating cylinder with conductors thereon is placed over an internal metallic tubular support which is supported by an end disk at one end, and open at the other, the open end being flared for stiffness.

3,805,105

HIGH PRESSURE ELECTRIC DISCHARGE DEVICE WITH ZIRCONIUM-ALUMINUM GETTER

Warren C. Gungle, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 30, 1971, Ser. No. 158,422
Int. Cl. H01j *61/26, 61/52*
U.S. Cl. 313—25 **5 Claims**



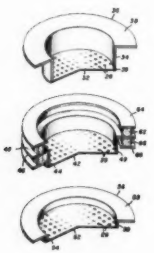
Strips of zirconium-aluminum are disposed within a high pressure metal iodide discharge lamp to getter hydrogen which is entrapped therein. The strips are welded to support straps on each of the arc tube press seals to thereby dispose the getter at each end of the lamp at locations where the operating temperature will be maintained at about 500°C.

3,805,106

ELECTROSTATIC FLY'S EYE LENS

John M. Hooker, Owensboro, Ky., assignor to General Electric Company, Owensboro, Ky.

Division of Ser. No. 886,218, Dec. 18, 1969, Pat. No. 3,704,511. This application Apr. 14, 1972, Ser. No. 244,005
Int. Cl. H01j *29/00, 31/00*
U.S. Cl. 313—82 **6 Claims**



An improved structure and method for the electrostatic lens array of a fly's eye lens in an electron beam device resulting in precise parallel spacing of the planar lens electrodes as well as precise axial alignment of the arrays of openings in the lens electrodes.

3,805,107

FACEPLATE FOR TELEVISION PICTURE TUBE

David C. Boyd, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 17, 1972, Ser. No. 227,168
Int. Cl. H01j *29/18;* **C03c** *3/04, 3/24*
U.S. Cl. 313—92 **1 Claim**

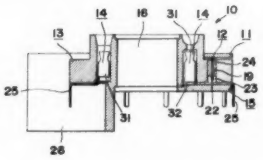
The glass faceplate for the envelope of a television picture tube is composed of an alkali metal silicate glass that contains strontia and lithia in its composition and is essentially free of fluorine. Freedom from fluorine minimizes batch volatilization and consequent air pollution during melting of the faceplate glass.

3,805,108

ELECTRON TUBE SOCKET

Minoru Suzuki, Tokyo, Japan, assignor to Showa Musen Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,630
Claims priority, application Japan, Apr. 19, 1972, 47-46531
Int. Cl. H01j *5/50*
U.S. Cl. 313—318 **4 Claims**



This invention relates to an electron tube socket. Said electron tube socket comprises an insulating base formed therein with a plurality of pin inserting openings arranged on a circle and disposed equidistantly from one another and with an annular groove disposed on the upper surface of the insulating base, said insulating base futher being formed with a plurality of recesses extending downwardly from said annular groove to the underside of the insulating base, a plurality of terminal contacts each comprising a pin holding cylindrical stem and a terminal portion formed integrally with each other, each of said plurality of terminal contacts having its pin holding cylindrical stem being received in one of said pin inserting openings and said terminal portion facing one of said plurality of recesses beneath the insulating base, and a conducting ring secured in said annular groove in said insulating base and formed integrally with a plurality of projections each adapted to be received in one of said plurality of recesses and disposed in spaced apart juxtaposed relationship to the terminal portion of one of said plurality of terminal contacts so as to form an arc-over gap therebetween.

3,805,109

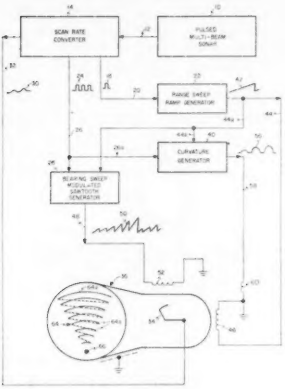
WEDGE SHAPED RASTER GENERATION

John G. Cowan, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 3, 1972, Ser. No. 303,665
Int. Cl. H01j *29/70*
U.S. Cl. 315—23 **5 Claims**

Circuitry is disclosed for generating a pie wedge shaped CRT raster characterized by curved lines, each having the same center of curvature, whereby the range scale is uniform throughout the raster when used as a sonar display. The dis-

closed circuitry produces a modulated sawtooth deflection signal and a clipped and modulated hyperbolic voltage



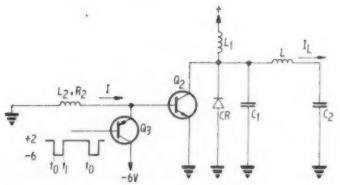
waveform, the effect of which is added to that of the normal range deflection voltage ramp to produce the desired raster.

3,805,110

CRT HORIZONTAL DEFLECTION CIRCUIT

John W. Ensor, New Windsor, and Alfred E. Popodi, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1972, Ser. No. 297,296
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 R **9 Claims**



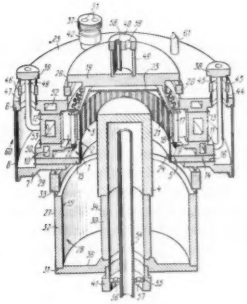
A horizontal deflection system for a cathode ray tube (CRT) includes a deflection circuit of the resonant recovery type, and a switching circuit comprising an inductor and an emitter-follower transducer. Conduction of the emitter-follower transistor provides rapid cutoff of the horizontal output transistor at the end of a sweep interval, and charging of the inductor. The L/R ratio of the inductor is selected, in conjunction with the cutoff voltage of the output transistor, such that at the end of the retrace period, the energy stored in the inductor affords sufficient base current for driving the horizontal output transistor in saturation throughout the entire sweep interval.

3,805,111

MICROWAVE ELECTRON TUBE

Vladimir Alexandrovich Ryabinin, naberezhnaya reki Fontanki, 33, kv. 103; Vladimir Ivanovich Sadofiev, prospekt Smirnova, 65, kv. 67; Igor Mikhailovich Mitin, Kolomenskaya ulitsa, 46, kv. 20; Kira Boleslavovna Yankevich, Shkolnaya ulitsa, 15, kv. 26; Evgeny Ivanovich Matrosov, ulitsa Fedoseenko, 25, kv. 63; Anton Felixovich Leliovsky, prospekt Smirnova, 27, korpus 2, kv. 90; Karl Romanovich Terra, Grazhdansky prospekt, 27, korpus 2, kv. 152, and Alexei Petrovich Kashirin, Grazhdansky prospekt, 108, korpus 1, kv. 36, all of Leningrad, U.S.S.R.

Filed Aug. 4, 1972, Ser. No. 278,013
Int. Cl. H01j *7/46, 19/80*
U.S. Cl. 315—39 **10 Claims**



A microwave electron tube with electrodes — a cathode, an anode and at least one grid. The cathode, the grid and the high-frequency leads coupled to them form the input circuit of the device. The anode, the grid and the high-frequency leads coupled to them form the output circuit of the device. Electric coupling between at least one of the electrodes and its high-frequency lead is accomplished by means of at least one microwave line section. One of the conductors of the microwave line is connected to the electrode and the other conductor, to its high-frequency lead. The two conductors are shorted at the ends opposite to the points at which they are connected to the electrode and to the high-frequency lead and are constructed in the form of surfaces of revolution the size of which is selected so that at the points of connection the impedance is substantially inductive. Such construction of the device makes it highly suitable for use in microwave power amplifiers which operate within a wide frequency band and provides a high efficiency and a high power gain of the device.

3,805,112

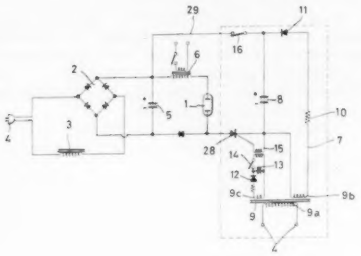
LIGHT SOURCE APPARATUS FOR ENDOSCOPE

Katsuhiko Tsumura, Matsudo, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 212,919
Claims priority, application Japan, Jan. 21, 1971, 46-1391
Int. Cl. H05b *37/00*
U.S. Cl. 315—160 **6 Claims**

To adapt a light source of an endoscope for naked eye viewing or for still photography, the source is controlled for continuous or flash lighting. Continuous lighting is provided by connecting an arc lamp to a direct current source. Flash

lighting is provided by discharging a capacitor through the lamp under the control of a silicon rectifier in turn controlled



by the synchro-switch of a camera. The rectifier can be manually or automatically cut off.

3,805,113

ELECTRICAL ENERGY DISTRIBUTION SYSTEM

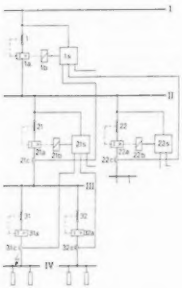
Otto Friedrich, Mannheim, Germany, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Continuation of Ser. No. 130,371, April 1, 1971, abandoned. This application Dec. 13, 1972, Ser. No. 314,577

Claims priority, application Germany, Apr. 10, 1970, 2017168

Int. Cl. H02h *3/30*

U.S. Cl. 317—27 A **4 Claims**



An energy distribution system includes several automatic switches connected in series to a feed line, and energy distribution busbars are connected between adjacent switches in the series. Each switch is provided with a contact release mechanism of the electromagnetic type including an armature for actuating the switch contacts to open position and an operating coil energized in the event of a short-circuit. In order that only that part of the overall distribution system where the short-circuit occurs shall be disconnected, which means that only that automatic switch which is immediately ahead of the short-circuit, in the direction of the feed line, respond to the short-circuit current, the armature of the contact release mechanism of each switch in the series except the last is retained in a non-operative position by means of a holding magnet energized from the next following switch of the series.

3,805,114

VOLTAGE-NONLINEAR RESISTORS

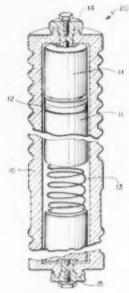
Michio Matsuoka; Yoshikazu Kobayashi; Hiroshi Oda, and Takeshi Masuyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Feb. 23, 1973, Ser. No. 335,423

Claims priority, application Japan, Mar. 1, 1972, 47-21814; Mar. 1, 1972, 47-21815; Mar. 1, 1972, 47-21816; Mar. 1, 1972, 47-21817; Mar. 1, 1972, 47-21818; Mar. 1, 1972, 47-21819; Mar. 1, 1972, 47-21820

Int. Cl. H02h *3/22*

U.S. Cl. 317—61 **6 Claims**



A voltage-nonlinear resistor has a sintered body of a composition comprising as a main constituent, zinc oxide (ZnO) and, as an additive, 0.1 to 3.0 mole percent of bismuth oxide (Bi_2O_3), 0.05 to 3.0 mole percent of antimony oxide (Sb_2O_3) and 0.1 to 3.0 mole percent of cobalt fluoride (CoF_2). Electrodes are applied to opposite surfaces of the sintered body.

3,805,115

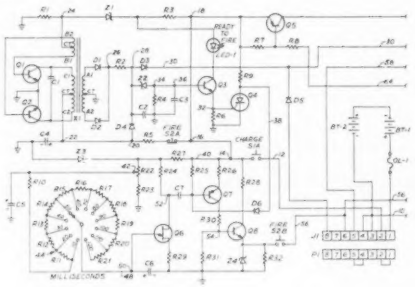
BLASTING MACHINE

James D. Heckelman, Norwalk, Ohio, assignor to Research Energy of Ohio, Inc., Cadiz, Ohio

Filed May 7, 1973, Ser. No. 357,826

Int. Cl. F23q *7/02*

U.S. Cl. 317—80 **11 Claims**



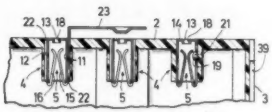
A blasting machine comprising a plurality of load condensers which supply energy to respective electronic switches which in turn are connected to respective blast initiating conductors. A pulse generator supplies time spaced signals to all of the electronic switches, and shorting devices are provided on each branch of the signal conductor leading to a respective electronic switch to short out the respective switch until the immediately preceding switch has been actuated and its load condenser has been discharged to its blast initiating conductor. The blasting machine further embodies a battery powered high voltage generator and control circuit which shuts off the

signal generator until a predetermined voltage is produced and which shuts off the generator after the predetermined voltage is reached.

3,805,116
CHASSIS FOR SUPPORTING REMOVABLE CIRCUIT COMPONENTS OF TEMPORARY ELECTRIC OR ELECTRONIC CIRCUITS

Euchar Nehmann, Leinfelden-Unteraichen, Germany, assignor to Franckh'sche Verlagshandlung W. Keller & Co., Stuttgart, Germany

Filed Jan. 22, 1973, Ser. No. 325,635
Claims priority, application Germany, Feb. 1, 1972, 2204559
Int. Cl. H02b 1/04
U.S. Cl. 317—99 **11 Claims**

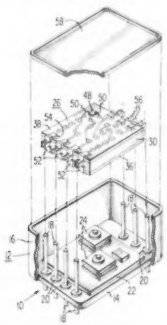


A chassis which removably supports conductors and circuit components that constitute temporary electric or electronic circuits, includes a plurality of one-piece resilient connector clips each having a housing visible from the outside of the chassis and provided with apertures. From the walls of the housing there extend inwardly directed contact tongue pairs, each aligned with an aperture in the housing. Conductors or terminals of circuit components are insertable in between the contact tongues of a contact tongue pair either through an aperture provided in the clip housing or from that side of the clip housing which is remote from the apertures.

3,805,117
HYBRID ELECTRON DEVICE CONTAINING SEMICONDUCTOR CHIPS

Earl Thomas Hausman, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 12, 1972, Ser. No. 314,429
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CP **3 Claims**

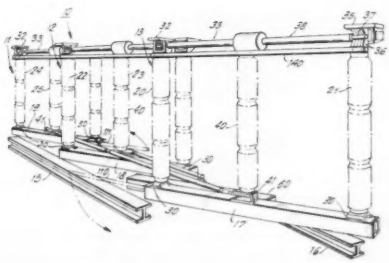


The device includes a sub-assembly comprising a solid member of insulating material and a number of electronic devices disposed within openings through the solid member. Lead wires of the components extend outwardly of the openings and into holes through a pair of printed circuit board members mounted on opposite sides of the solid member, the lead wires being soldered to various conductive paths on the circuit boards. Spring clips are used to clamp the circuit boards against the solid member, the clips being soldered to various ones of the conductive paths. Semiconductor chips are mounted on the circuit boards after the solder operations, and the sub-assembly is mounted on the terminal leads of a header by welding the leads to various ones of the spring clips.

3,805,118
COLLAPSIBLE SWITCH AND RACK

William A. Boney, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed June 29, 1973, Ser. No. 374,898
Int. Cl. H02b 1/04
U.S. Cl. 317—103 **8 Claims**

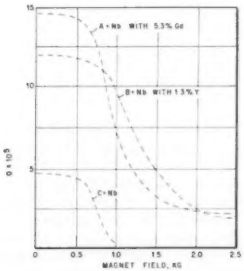


A high voltage multipole switchgear frame comprising substantially parallel longitudinal rails; base rails for each pole spanning the longitudinal rails. The base rails are hingedly connected to the longitudinal frames to permit collapse of the frame for shipment from a rectilinear operative arrangement of the rails and poles to an acute angle parallelogram requiring smaller volume; and being reerectable and secured in operative position at the installation site. This arrangement makes it possible to complete and align the switchgear at the factory rather than in the field.

3,805,119
SUPERCONDUCTOR

Carl C. Koch, Oak Ridge, Tenn., and Gordon Ross Love, Greenville, S.C., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Division of Ser. No. 76,351, Sept. 29, 1970, abandoned. This application July 12, 1972, Ser. No. 270,881
Int. Cl. H01h 47/00; H01v 11/12; C22c 27/00
U.S. Cl. 317—123 **2 Claims**



A superconductive niobium alloy having the property in the super-conducting state of remaining high-Q in appreciable d.c. magnetic fields, and a method for making the same. The alloy consists essentially of niobium metal and an additive

metal dispersed as a second phase therein. The additive metal is gadolinium, yttrium, or a member of the lanthanum series of rare-earth metals.

3,805,120

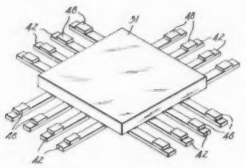
EXPLOSIVE BONDING OF WORKPIECES

Benjamin Howell Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 68,431, Aug. 31, 1970, Pat. No. 3,727,296, which is a continuation-in-part of Ser. No. 6,829, Jan. 29, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,567

Int. Cl. H01l *1/14*

U.S. Cl. 317—234 R **6 Claims**



An article of manufacture comprising a beam-leaded semiconductor device. Each beam lead has a quantity of explosive material deposited thereon to facilitate the subsequent explosive bonding of the device to a suitable substrate. The preferred explosive is lead azide and in some embodiments, the beam leads have an undulating or castellated surface to increase the adhesion of the explosive bond.

3,805,121

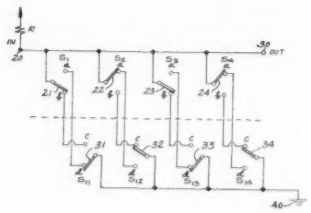
ELECTRONIC ANTI-THEFT CODED COMBINATION LOCKING SYSTEM

Gerald M. Goldman, Knoll Wood Extension, Elmsford, N.Y.

Continuation-in-part of Ser. No. 199,883, Nov. 18, 1971, which is a continuation-in-part of Ser. No. 864,801, Oct. 8, 1969, Pat. No. 3,631,301. This application Apr. 17, 1972, Ser. No. 244,678

Int. Cl. H01h *47/00, 27/06*

U.S. Cl. 317—134 **6 Claims**



An electronic anti-theft code combination locking system operable only by personnel knowing the code number which provides entry. The system includes first and second identical groups of multi-contact selector switches, each switch being settable to any one of a series of numbers or other symbols to effect a switch closure. The first group is disposed at a generally accessible location whereas the second group is at an inaccessible location. The first and second groups of switches are interconnected to produce a series circuit defined by the connections of all switches in both groups, the series circuit being closed only when the settings of the first group match or complement the settings of the second group. The numbers at which the switches of the first group are set to effect the closed circuit, constitute the code number. The series circuit is interposed between a power source and an electrically-actuated locking mechanism which is activated only when the series circuit is closed.

3,805,122

SEMICONDUCTOR DISC ASSEMBLY PROVIDING PREDETERMINED COMPRESSIVE FORCE AGAINST OPPOSITE FACES OF THE DISC BY CLAMPED HEAT-CONDUCTIVE BODIES

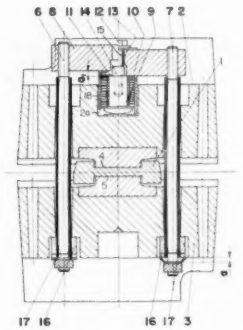
Xaver Vogel, Ennetturgi, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed Nov. 28, 1972, Ser. No. 310,150

Claims priority, application Switzerland, Dec. 3, 1971, 17592/71

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



A semiconductor unit which comprises a semiconductor disc assembled between two heat-conducting bodies and which are pressed into contact with opposite faces of the disc by means of clamping bolts which pass through bores in the heat-conducting bodies and terminate in a bridging yoke. A compression spring interposed between the yoke and the adjacent heat-conducting body serves to establish the compressive force existing between the heat-conducting bodies and the semiconductor disc, and the amount of effective force stored in the compressed spring is set by means of a screw bolt and nut arrangement on which the spring is secured to the yoke in a sub-assembly operation and compressed to a predetermined degree established by a stop on the nut which is engageable with the yoke as the nut is tightened on the bolt.

3,805,123

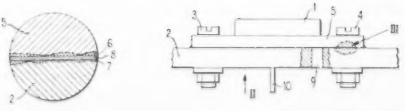
ARRANGEMENT FOR ADHESIVELY JOINING HEAT-DISSIPATING CIRCUIT COMPONENTS TO HEAT SINKS AND METHOD OF MAKING THEM

Peter Rieger, Vienna, Austria, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 12, 1972, Ser. No. 314,479

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **3 Claims**



This invention relates to a method and an arrangement of mounting semiconductor elements on heat sinks. The switching element is glued inseparably to an intermediate

layer consisting of cleavable material. One side of the intermediate layer is glued inseparably to the heat sink. If a defective switching element has to be replaced, a moderate impact on the mounting plate of the element in parallel to the surface of the heat sink is sufficient to cause an exact cleavage.

3,805,124

STANNIC OXIDE PHOTOCONDUCTIVE DEVICE FOR DETECTING ULTRAVIOLET LIGHT AND METHOD FOR MAKING THE SAME

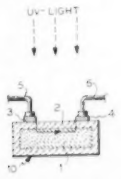
Masahiro Nagasawa, and Hiroyuki Watanabe, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Filed Mar. 22, 1973, Ser. No. 343,672

Claims priority, application Japan, Mar. 27, 1972, 47-4730522; Mar. 27, 1972, 47-4730523; Mar. 27, 1972, 47-4730524; Mar. 27, 1972, 47-4730525; Mar. 27, 1972, 47-4730526

Int. Cl. H01l *15/00*

U.S. Cl. 317—235 R **23 Claims**



This invention provides a stannic oxide photoconductive device for detecting ultraviolet light very efficiently and to a method for making the same. The device has a stannic oxide body with at least two regions, one of which is a conductive region consisting essentially of stannic oxide, and the other of which is a photoconductive laminal region consisting essentially of stannic oxide and an acceptor impurity. Two electrodes are applied to the stannic oxide body, at least one of which is attached to the photoconductive laminal region.

3,805,125

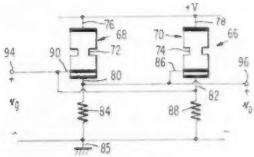
SEMICONDUCTOR MEMORY ELEMENT

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,669

Int. Cl. H01l *5/00*; **G11c** *11/40*

U.S. Cl. 317—234 V **11 Claims**



The memory element makes use of two transferred electron devices, at least one of which is notched. The transferred electron devices are connected in a feedback arrangement in order to trigger one another. The memory element can be used for processing extremely high speed signals.

3,805,126

CHARGE STORAGE TARGET AND METHOD OF MANUFACTURE HAVING A PLURALITY OF ISOLATED CHARGE STORAGE SITES

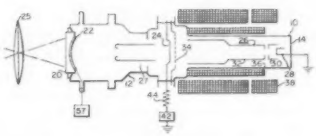
Wolf D. Frobenius, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 11, 1972, Ser. No. 296,719

Int. Cl. H01j *15/00*

U.S. Cl. 317—235 R **4 Claims**

A charge storage device and method of manufacture of the type in which a target electrode provides a plurality of spatially disturbed isolated charge storage sites of semiconductor material provided within the interstices of an electrical conductive mesh with insulating barrier means provided between the semiconductor storage sites and the conductive mesh. Input excitation is directed onto the input side of the target and may be in the form of electrons or light capable of generating electron-hole pairs within the semiconductor material which diffuse through to the storage sites. The storage sites which are located on the output side of the target are provided with sensing and converting means such as an electron beam for converting the charge into an electrical signal. The process of manufacture of the device includes providing a semiconductor wafer with a substrate and pillars extending from one surface of said substrate, forming a junc-



tion within the upper portion of the pillar, providing an insulating coating on the pillars and surrounding intervening surfaces between the pillars, electroplating an electrical conductive support mesh within the moat region surrounding the pillars and etching away the substrate of the wafer so that only the pillar members remain supported within the metallic support mesh framework. The conductive mesh with the insulating coating provides a barrier about each semiconductor storage site and permits passage of minority carriers generated near the input side of the target within the semiconductor member to the storage sites without diffusion to adjacent storage sites. In this manner, the target images intense spots of input radiation in a scene without significant spreading or blooming of the high intensity spots caused by lateral diffusion of the minority carriers through adjacent storage sites.

3,805,127

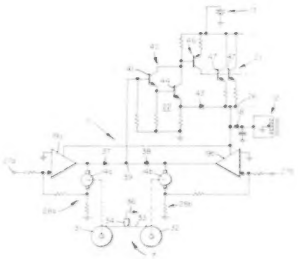
MOTOR DRIVE CIRCUIT

Gordon D. Svendsen, San Carlos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Division of Ser. No. 149,497, June 3, 1971, Pat. No. 3,753,138. This application Mar. 26, 1973, Ser. No. 344,689

Int. Cl. H02p *5/16*

U.S. Cl. 318—139 **3 Claims**



A voltage comparator compares the operating voltage provided to a power amplifier to a voltage representative of that appearing across a load. A unity gain linear amplifier is coupled between a voltage source and the power amplifier that is responsive to the voltage comparator to maintain the operating voltage provided to the power amplifier sufficient to deliver the required current to the load.

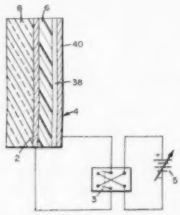
3,805,128
CADMIUM SULFIDE THIN FILM SUSTAINED CONDUCTIVITY DEVICE WITH CERMET SCHOTTKY CONTACT

Ronald F. Scholl, Malibu, and William P. Bleha, Jr., Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 140,086, May 4, 1971, Pat. No. 3,716,406. This application Sept. 1, 1972, Ser. No. 285,686

Int. Cl. H01l 3/20

U.S. Cl. 317—235 UA **5 Claims**



A solid state electrical device which exhibits the property of having different and sustained states of electrical conductivity and method for making same is disclosed. More particularly, a method is disclosed for fabricating an improved solid state thin film electronic storage medium which can retain by conductivity modulation a high resolution image momentarily impressed thereupon by means of either optical or electron beam inputs for an extended period of time (several tens of seconds) provided that an applied electric field is maintained across the solid state element. This phenomenon is hereinafter referred to as "field sustained conductivity." Removal or reversal of the applied electrical field restores the solid state element to its normally insulating condition.

3,805,129
FIELD EFFECT TRANSISTOR HAVING TWO GATES FOR FUNCTIONING AT EXTREMELY HIGH FREQUENCIES

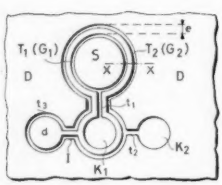
Tung Pham-Ngu, Paris, France, assignor to Thomson-CSF, Paris, France

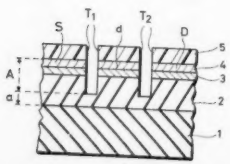
Filed Oct. 13, 1972, Ser. No. 297,394

Claims priority, application France, Oct. 29, 1971, 71.39034

Int. Cl. H01l 5/00

U.S. Cl. 317—235 R **4 Claims**





A field effect transistor (F.E.T.), comprising two control gates disposed in side-by-side relationship and capable of being operated at frequencies higher than 1 GHz, is provided.

A gate G_1 is deposited at the bottom of a trench T_1, recessed in the F.E.T.'s semiconductive layer and connected to a contact stud K_1. It encloses the source S of the transistor and is surrounded, at a distance of the order of 10 microns, by a gate G_2 deposited at the bottom of a trench T_2 recessed in the F.E.T.'s semiconductive layer and connected to a contact stud K_2. The drain D of the transistor surrounds the trench T_2 and the stud K_2. The cross-section of the trenches is of the order of 1 micron by 1 micron.

3,805,130
SEMICONDUCTOR DEVICE

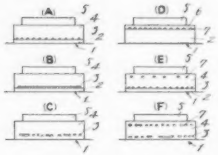
Shumpei Yamazaki, 20-7, 1-chome, Shizuoka, Japan

Continuation-in-part of Ser. No. 192,810, Oct. 27, 1971, abandoned. This application July 3, 1973, Ser. No. 376,154

Claims priority, application Japan, Oct. 27, 1970, 45-094483

Int. Cl. H01l 11/14

U.S. Cl. 317—235 B **29 Claims**



A semiconductor device is disclosed having a layer of metal clusters or semiconductor clusters acting as trap centers for electrons or holes to control the electrical properties of the device.

3,805,131
ELECTRICAL DRIVE ARRANGEMENT FOR REWINDING EQUIPMENT

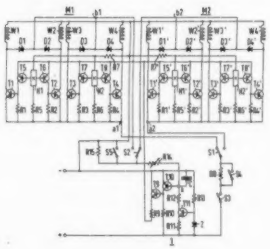
Friedrich Kappius, Nurnberg-Eibach, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 1, 1971, Ser. No. 185,570

Claims priority, application Germany, July 22, 1971, 1236684

Int. Cl. H02p 5/46

U.S. Cl. 318—77 **5 Claims**



In an electrical drive arrangement for rewinding equipment or a rewinding device, the unwinding or supply reel is driven by a reel motor and the take-up or winding reel is driven by a reel motor. The reel motors are controlled by speed. A speed regulating device which may be selectively connected by a first selector switch to one of the two reel motors is provided in common for both reel motors. During the rewinding of the wound material, the rotary speed of the motor of the take-up reel is controlled in accordance with the speed of the supply reel.

3,805,132

ELECTRONIC CIRCUIT FOR STABILIZING THE SWING AMPLITUDE OF A MECHANICAL VIBRATING SYSTEM

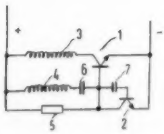
Helmut Stechmann, Schwenningen, Germany, assignor to Kienzle Uhrenfabriken GmbH, Schwenningen am Neckar, Germany

Filed Dec. 22, 1971, Ser. No. 210,965

Claims priority, application Germany, Dec. 28, 1970, P 20 63 956.9

Int. Cl. H02k *33/14*

U.S. Cl. 318—130 **5 Claims**



A circuit for stabilizing the swing amplitude of a mechanical vibrating system comprises an output coil and a control coil coupled respectively to output and regulating transistors, across a source of supply potential. A resistor is connected in series with the emitter-collector circuit of the regulating transistor across the source of supply potential to form a voltage divider to which the base of the output transistor is connected. A capacitor is connected in series with the control coil, and the series connected control coil and capacitor are in turn connected in parallel with said resistor. A further capacitor connects the base of the regulating transistor to the base of the output transistor, or to the junction between the control coil and first-mentioned capacitor, when said transistors are of like conductivity types. When the transistors are of unlike conductivity types, the further capacitor couples the base of the regulating transistor to the positive side of the supply source.

3,805,133

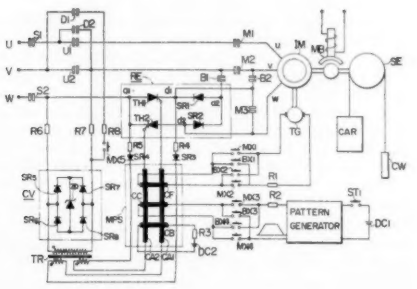
CONTROL SYSTEM FOR INDUCTION MOTORS

Takanobu Hatakeyama, and Seiya Shima, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1973, Ser. No. 385,336

Int. Cl. H02p *3/20*

U.S. Cl. 318—211 **5 Claims**



A simple and inexpensive control system for induction motors comprising a three phase induction motor, a three phase AC source, a rectifying bridge circuit consisting of a pair of thyristers and a pair of rectifying elements, a first contactor group for connecting an antiparallel circuit consisting of the thyristors in the bridge circuit between one terminal of the AC source and one terminal of the induction motor at the time of motoring of the induction motor, a second contactor group for connecting the AC terminals of the bridge circuit to two terminals of the AC source and connecting the DC terminals of the bridge circuit to two terminals of the induction motor at the time of braking of the induction motor, a single phase shifter for ignition controlling the pair of thyristers, means for supplying the difference between two line voltages of the AC source to the phase shifter at the time of motoring of the motor, and means for supplying one line voltage of the AC source to the phase shifter at the time of braking of the motor.

3,805,134

BRUSHLESS DC MOTOR USING HALL ELEMENTS

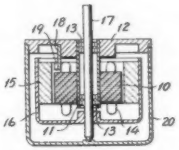
Samuta Osamu; Ohno Hirotoshi, and Nakazawa Tadao, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sept. 18, 1972, Ser. No. 289,944

Claims priority, application Japan, Sept. 18, 1971, 46-72632; Jan. 18, 1972, 47-6626

Int. Cl. H02k *29/02*

U.S. Cl. 318—254 **3 Claims**



A brushless DC motor is disclosed in which Hall elements are mounted on projections of a holder projecting with respect to the peripheral surface of the rotor made up of a permanent magnet so that magnetic flux from the permanent magnet passes in a concentrated state therethrough, whereby the magnetic flux is caused to concentrate with high density on the Hall elements thereby to increase the output thereof.

3,805,135

APPARATUS FOR FIELD-ORIENTED CONTROL OR REGULATION OF ASYNCHRONOUS MACHINES

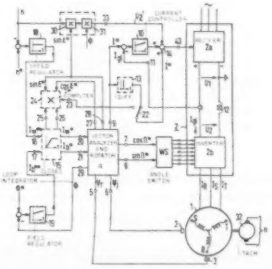
Felix Blaschke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 24, 1972, Ser. No. 283,404

Claims priority, application Germany, Sept. 4, 1971, 2144422

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **11 Claims**



In a field orientation-controlled asynchronous machine which is fed by a converter with impressed stator current, the

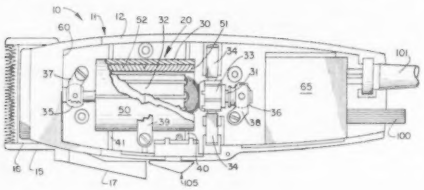
regulation of the magnitude of the current is brought to the highest dynamic quality of anticipatory control of the control loop, by letting an anticipatory control of the control loop take place via the set-point value and the deviation value. Through the action of these two anticipatory controls, the actual magnitude of the current follows its set-point value without delay, so that during dynamic transients the pre-set relation between the current angle and current magnitude is maintained at any point in time.

3,805,136

ELECTRIC HAIR CLIPPER WITH PERMANENT MAGNET MOTOR

Roy E. Meyer; John F. Wahl, and William M. Walton, all of Sterling, Ill., assignors to Wahl Clipper Corporation, Sterling, Ill.

Continuation of Ser. No. 94,903, Dec. 3, 1970, abandoned.
This application Aug. 2, 1972, Ser. No. 277,299
Int. Cl. H02p *5/16*
U.S. Cl. 318—331 **3 Claims**



An electric hair clipper of the rotary motor type possessing superior cutting power and having a casing of relatively small transverse dimensions for enhanced visibility of the cutting blades and comfortable handling during use. The size and shape of the drive motor establish the dimensions of the casing, the motor having small transverse dimensions in relation to its power capacity. The motor, which has a permanent magnet field and is energized by direct current, may be single speed, two speed, or continuously variable in speed over a wide range, each version having a stall torque comparable to that of a motor of larger size, or a motor designed for a higher no-load speed. The motor has a power supply energized by commercial alternating current power, the power supply including a rectifying means having an output means providing power to the motor in an amount depending on the mechanical load encountered by the motor. As the motor tends to slow down due to load, more power is supplied. In one form, the output means includes a Zener diode, in another a Zener diode and shunting switch, in yet another a silicon controlled rectifier circuit, and in another a silicon controlled rectifier circuit with an adjusting means. The field structure of the motor includes a permanent magnet means wherein the ratio of field structure length to field structure diameter (L/D) exceeds 1.25 with the field structure diameter less than about 1¼ inches, providing a motor of small transverse dimensions. In more detailed aspect, the field structure provides a skewed magnetic field, enhancing smoothness of motor operation, and, due to the reduced size of the motor, the axis of the motor shaft intersects the movable clipper blade adjacent the cutting teeth, permitting use of an inexpensive transmission of the cam type.

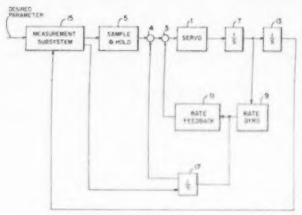
3,805,137

SAMPLED SIGNAL SERVO CONTROL SYSTEM

Richard L. Fahrner, Huntington Beach, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 21, 1972, Ser. No. 308,617
Int. Cl. G05b *11/01*
U.S. Cl. 318—636 **2 Claims**

A servo system obtains error signals from a sample and hold system. A rate feedback is provided from the output of a servo, and achieved parameter signal is fed back to the sample and hold system to correct the error signal upon the next sample interval. A feedback to the input of the servo system is provided by an integrator which integrates the rate of change of the servo system's parameter each sample interval.

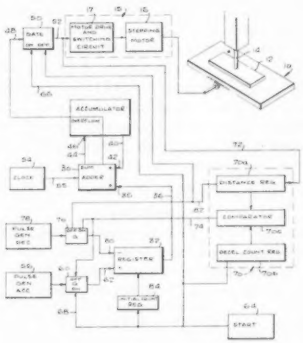


3,805,138

STEPPING MOTOR DRIVE ACCELERATION, DECELERATION CONTROL

Harry V. Hilker, 1118 Pescando Dr., Newport Beach, Calif.

Filed Jan. 24, 1973, Ser. No. 326,446
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **8 Claims**



An energizing circuit for providing pulses to a stepping motor, which accelerates and decelerates the stepping motor at a closely controlled rate, including a digital differential analyzer (DDA) and a starting circuit that connects the accumulator of the DDA to the stepping motor and simultaneously connects a pulse generator to the register of the DDA so that the pulse rate to the stepping motor immediately increases at a constant rate. The register has a limited maximum count which determines the maximum pulse rate to the stepping motor. A counter that counts pulses to the stepping motor delivers a signal when the count is less than the final count by a predetermined amount, to disconnect the first pulse generator and connect another pulse generator that decreases the count in the register, to thereby decelerate the stepping motor at a controlled rate.

ERRATUM

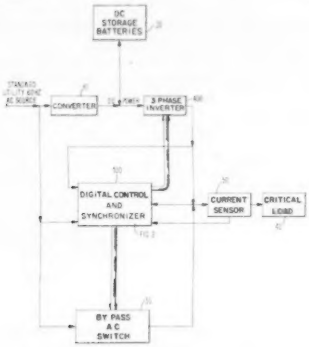
For Class 318—139 see Patent No. 3,805,127

3,805,139

PROGRAMMED WAVEFORM POWER INVERTER CONTROL SYSTEM

Harry Swartzlander Hoffman, Jr., Saugerties, and Kenton Hugh Knickmeyer, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1971, Ser. No. 293,751
Int. Cl. H02m 7/00
U.S. Cl. 321—5 20 Claims



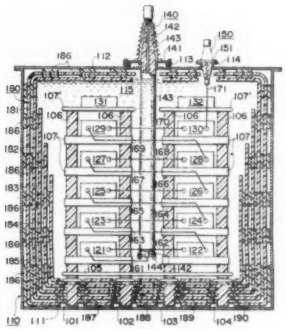
A multi-phase programmed pulse waveform generating inverter control system for controlling power switches to provide transient free electric power to a critical load in synchronism with a utility power source.

3,805,140

OIL-FILLED AC-DC THYRISTOR CONVERTOR

Eiki Takahashi, and Yuzuru Kamata, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 346,807
Int. Cl. H02m 7/00
U.S. Cl. 321—8 R 11 Claims



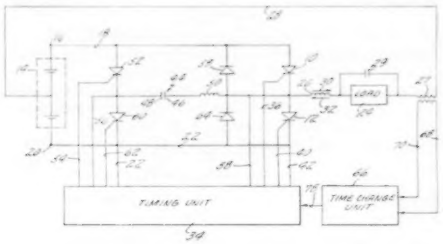
An AC-DC convertor employing a thyristor as a valve which is used in the high tension DC transmission circuit, in which insulated thyristors are multilaid in a metal container filed with insulating oil, whose inside wall is provided with an insulating barrier of solid with higher insulating resistor than that of the insulating oil, the insulating barrier being used mainly for the DC voltage applied between the thyristors and the inner wall of the metal container, thereby the AC-DC convertor being made small-sized.

3,805,141

BIMODAL INVERTER

Thomas N. Pompa, Jr., Windsor, Conn., and Robert J. Resch, Chardon, Ohio, assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 8, 1973, Ser. No. 322,052
Int. Cl. H02m 1/18
U.S. Cl. 321—11 2 Claims



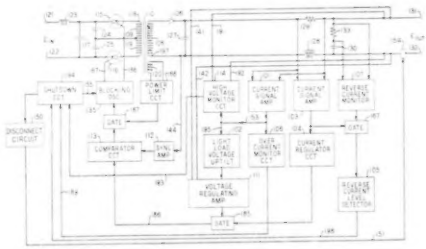
In an auxiliary impulse commutated inverter, the interval between the initiation of the commutation current and the turning on of a nonconducting main controlled rectifier is dependent upon an applied load. In response to a rapid increase of the load, the time interval is decreased, thereby increasing the energy stored by a commutating capacitor.

3,805,142

CURRENT LIMIT CIRCUIT WITH SUPERSEDING CHARACTERISTIC TO ACTIVATE OVERCURRENT PROTECTION CIRCUIT

Robert Rando, Brooklyn, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 10, 1973, Ser. No. 322,555
Int. Cl. H02m 1/18
U.S. Cl. 321—11 8 Claims



A current and voltage regulated DC to DC converter is designed with protection features to permit its operation in parallel with like DC to DC converters. The features are designed to assure shutdown protection against overcurrent and overvoltage conditions and to assure that each converter will contribute a current to the common load. The protection features include a selective high voltage shutdown to shut down only the converter causing an overvoltage and an overcurrent protection circuit to supersede the normal current regulation in response to a fault condition. A reverse current shutdown circuit protects the common load from faults and short circuits internal to the converter circuit. These protection features permit the converters to operate in parallel without shutting down the entire system should an individual converter malfunction.

3,805,143

CAPACITOR-DISCHARGE STUD WELDING APPARATUS

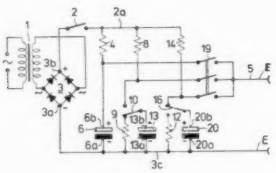
Dankmar Tauern, Triesenberg, and Karl-Max Harder, Vaduz, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Feb. 17, 1972, Ser. No. 227,040

Claims priority, application Germany, Feb. 19, 1971, 2108105

Int. Cl. H02m 7/00

U.S. Cl. 321—15 28 Claims



In the apparatus disclosed, a direct current source charges several banks of capacitors. A discharge circuit connects the capacitor banks to the same welding terminals. Charge-circuit decoupling devices, each connected to a separate bank in the charging paths from the source to the bank, decouple the banks from each other. Discharge-circuit decoupling devices, each connected to a bank in the discharge paths of the circuit between the banks and the welding terminals, decouple the banks. The charge-circuit decoupling devices may be composed of separate resistors, diodes, or the like. The discharge-circuit coupling devices are composed of resistors, diodes, thyristors, current switches, or the like.

3,805,144

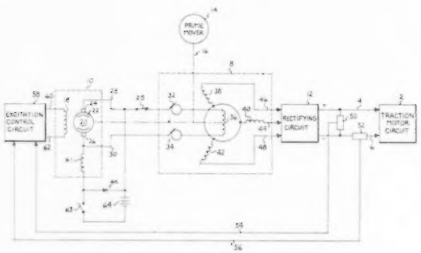
ARRANGEMENT FOR INHIBITING UNDERSIRABLE REVERSE FIELD CURRENTS IN EXCITATION SYSTEMS OF TRACTION VEHICLE POWER SUPPLIES

Lloyd W. McSparran, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Apr. 16, 1973, Ser. No. 351,807

Int. Cl. H02h 7/06

U.S. Cl. 322—25 4 Claims



In electric traction vehicles, such as diesel locomotives, a prime mover drives an alternator and d-c excitation generator system whose output power is applied to traction motors. The alternator output is conventionally regulated by a control signal applied to a first shunt winding of the exciter generator and the exciter armature output is connected in series circuit with the alternator field. Under some conditions, such as dynamic braking, the alternator output must be reduced to very low levels. This requires reversal of the control signal polarity, because of the residual flux in the d-c exciter, and may result in undesirably large reverse currents in the alternator field. Such undesired reverse currents are inhibited by connecting a low power diode in series circuit with the exciter armature circuit and a low impedance second winding of the exciter, such as the cranking winding. The diode is poled so as to conduct when there are reverse currents in the exciter armature and alternator field circuit and the second winding is connected in respect to the first winding, such that the flux of the first winding opposes that of the first winding.

3,805,145

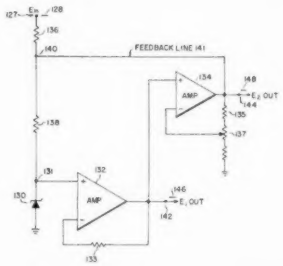
OPERATIONAL AMPLIFIER STABILIZED POWER SUPPLY

Bernard M. Gordon, Magnolia, Mass., assignor to Gordon Engineering Company, Watertown, Mass.

Division of Ser. No. 811,781, April 1, 1969, Pat. No. 3,603,945. This application Apr. 12, 1971, Ser. No. 133,410

Int. Cl. G05f 1/46

U.S. Cl. 323—16 4 Claims



A voltage source for generating precision reference signals includes a pair of differential input operational amplifiers serially connected in stages. One input terminal and the output terminal of each operational amplifier are resistively connected, the voltage appearing at the output terminal of each operational amplifier being stabilized by the stability factor of the operational amplifier. A stabilized voltage at the output terminal of each stage is applied to the other input terminal of the other stage.

3,805,146

VOLTAGE FOLLOWER WITH MATCHED FIELD EFFECT TRANSISTORS AND MATCHED CURRENT AMPLIFYING TRANSISTORS FOR CAPACITOR CHARGING

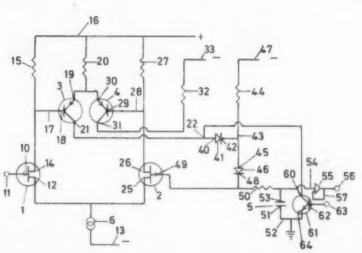
John Edward Culley, Kidderminster, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Feb. 5, 1973, Ser. No. 329,339

Claims priority, application Great Britain, Feb. 10, 1972, 6358/72

Int. Cl. H03k 5/18

U.S. Cl. 323—16 11 Claims



A voltage follower comprising a pair of matched field effect transistors, a pair of matched current amplifying transistors

controlled by the field effect transistors, and a capacitor to be charged by one of the current amplifying transistors to a voltage corresponding to that of an input of one of the field effect transistors.

3,805,147

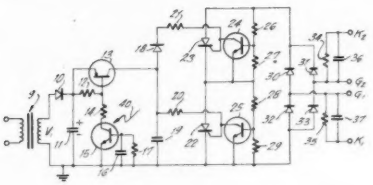
ZERO-CROSSING TRIGGER CIRCUIT FOR FIRING SEMICONDUCTOR DEVICES AT ZERO VOLTAGE

Richard J. Williams, Carson, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed May 15, 1972, Ser. No. 253,280

Int. Cl. H01h *9/56*

U.S. Cl. 323—21 **9 Claims**



A zero voltage triggering circuit for triggering semiconductor devices consists of a module which is applicable to single and three-phase operation for controlling the firing of a semiconductor device in a region about zero instantaneous voltage of the a-c power circuit. At least one pilot thyristor is connected in series with the main line, and the gate-to-cathode circuit of the semiconductor device to be controlled. The pilot thyristor is, in turn, fired by a light-activated transistor amplifier which is turned on in response to an input control signal to enable the firing of the thyristor. A further transistor prevents the application of gate current to the pilot thyristor until the main line voltage is within some small voltage range about a zero voltage "window".

3,805,148

METHOD FOR MEASURING NITROGEN OXIDES IN POLLUTION AIR AND DEVICE FOR PERFORMING THE SAME METHOD

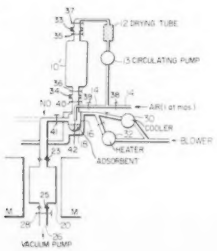
Hiromichi Uehara, Sagamihara, and Yasuharu Ijuin, Tokyo, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Continuation-in-part of Ser. No. 65,767, Aug. 21, 1970, abandoned. This application May 25, 1972, Ser. No. 256,729

Claims priority, application Japan, Mar. 31, 1970, 45-26561

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R **8 Claims**



NO and/or NO_2 is measured by sampling gas containing them in a very small sampling tube and introducing the gas into a C band (i.e., $4GH_2$) EPR cavity resonator, which is provided with Stark electrodes and Zeeman modulation coils for providing Stark and Zeeman modulations selectively to thereby detect NO by Stark modulation and NO_2 by Zeeman modulation. For a gas containing NO and/or NO_2 at low concentration, the content thereof is firstly cold-adsorbed in an adsorbent and after removing the residual components it is discharged from the adsorbent into the C band EPR cavity resonator previously evacuated.

3,805,149

METHOD OF LINEAR MEASUREMENT OF A VARIATION IN CAPACITANCE AND CORRESPONDING DIGITAL-DISPLAY DEVICE

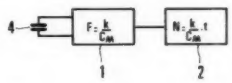
Gilles Delapierre, Seyssinet-Pariset, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed June 20, 1972, Ser. No. 264,508

Claims priority, application France, June 24, 1971, 71.23030

Int. Cl. G01r *11/52, 27/26*

U.S. Cl. 324—60 C **6 Claims**



A fixed or variable capacitor is inserted in the circuit of an oscillator having an operating frequency which is inversely proportional to the value of the capacitor. The method consists in counting a constant number of periods of the oscillator, the resultant counting time being accordingly a linear function of the value of the capacitor.

3,805,150

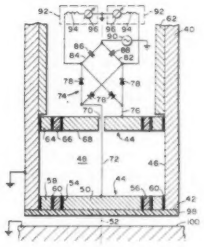
ENVIRONMENT IMMUNE HIGH PRECISION CAPACITIVE GAUGING SYSTEM

Robert C. Abbe, Newton, Mass., assignor to ADE Corporation, Newton, Mass.

Division of Ser. No. 64,240, Aug. 17, 1970, Pat. No. 3,706,919. This application Sept. 27, 1972, Ser. No. 292,700

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **24 Claims**



A capacitive probe having at least two electrically conducting probe tips or electrodes centrally placed within an electrically conducting housing and axially displaced from each other within the housing. A physical dimension is measured by determining the capacitance between one probe tip and a surface, the capacitance therebetween varying with the dimension being measures. Precise machining of planar probe tips and assemblies to make them identical, their close placement, and the use of a moisture impenetrable dielectric for supporting the tips within the housing insure precision measurement and environmental independence. This precision and its maintenance is augmented by electronic excitation circuitry for the probe tips which maintain the instantaneous electric potential

on each tip approximately equal and which gives an output signal whose average variation from a ground or common potential is directly indicative of the distance being gauged. Modifications to the basic probe construction include: provisions for guarding each probe tip with a substantially equal potential: thin or thick film deposition probe tip constructions; and probes having a plurality of tips for sensing a multiplicity of factors influencing the capacitance between the probe and a surface with circuits for separating the factors. A specific application of this for dielectric strip width measurement is presented.

3,805,151

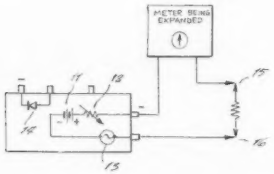
DIRECT CURRENT RESISTANCE SCALE EXPANDER

John E. Murphy, 19 Phyllis Dr., Bethpage, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,827

Int. Cl. G01r *27/02*

U.S. Cl. 324—62 **3 Claims**



A device for electrically expanding an electric meter the device consisting of a circuit that is in series with the meter that is intended to be expanded; the circuit including a voltage source, a variable resistor and a fuse.

3,805,152

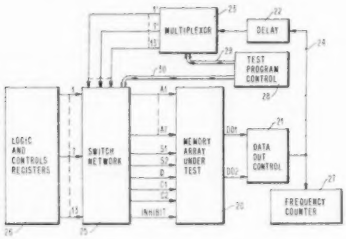
RECIRCULATING TESTING METHODS AND APPARATUS

Benjamin Ebersman, Poughkeepsie, N.Y.; John V. Meehan, Vienna, Va., and William T. Wilson, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1971, Ser. No. 168,875

Int. Cl. G01r *15/12*; **G06f** *11/00*

U.S. Cl. 324—73 R **5 Claims**



Recirculating testing methods and apparatus are employed to perform functional tests on sequential circuits arranged in an array as information storage apparatus. By measuring the propagation times through the apparatus, the AC parameters of the array are determined and the high speed performance of the apparatus ascertained. The information storage apparatus under test is connected in a closed loop with input drive circuitry and delay and decoding circuitry, coupling the output of the apparatus to the input circuitry. A fixed pattern of information is entered into the circuits or storage cells of the apparatus. When predetermined binary signals are applied to the array as well as the output of the apparatus, oscillations occur as a result of the closed loop connection. These oscillations are measured. By sequentially changing the binary signals applied to the array, the entire apparatus is tested.

3,805,153

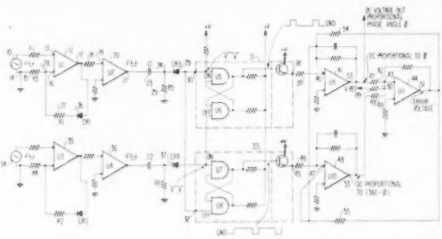
PHASE MEASUREMENT CIRCUIT

George A. Gallant, Burlington, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,205

Int. Cl. G01r *25/00*; **H03d** *13/00*

U.S. Cl. 324—83 A **11 Claims**



A phase measurement circuit having two integrators, one developing a first D.C. voltage proportional to a phase difference between two signals and a second developing a D.C. voltage proportional to 360° minus the phase difference. The voltages developed are summed and compared to a reference voltage and the resultant signal is applied to a differential amplifier whose output is a D.C. voltage proportional to the error and of a polarity indicative of the error direction. This error signal is fed back to the input of the integrators to compensate for errors that otherwise might exist due to conversion of phase voltages to D.C. voltages by correcting the phase reading and bringing the error back to zero.

3,805,154

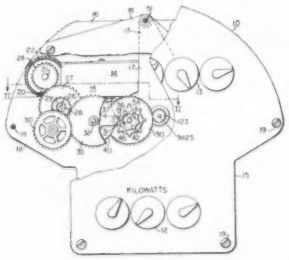
INTERVAL TIMING MECHANISM FOR A MAXIMUM DEMAND METER

Kenneth G. Halstead, and Eugene C. Benbow, both of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1972, Ser. No. 287,922

Int. Cl. G01r *19/16*; **G06c** *15/42*

U.S. Cl. 324—103 R **6 Claims**



An improved interval timing mechanism for a maximum demand meter has a single intermittent motion arrangement including a continuously driven shaft carrying a single gear tooth projection which intermittently engages complementary shaped gear teeth of an intermittent driven shaft. The uniform driving engagement effected between the shafts during the intermittent shaft movement precisely controls a periodic reset operation within the demand meter.

3,805,155

ELECTRONIC CIRCUIT TEST EQUIPMENT INDICATING A PLURALITY OF CONDITIONS BY A PLURALITY OF DIFFERENT FREQUENCY AUDIBLE SIGNALS

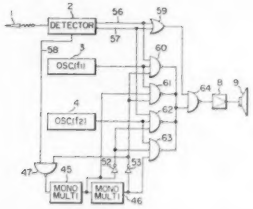
Shin Tsuda, Saitama, and Ryozo Hiraga, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1971, Ser. No. 206,286

Claims priority, application Japan, Dec. 11, 1970, 45-110309; Dec. 11, 1970, 45-110310; Dec. 11, 1970, 45-110311; Sept. 28, 1971, 46-75622; May 31, 1971, 46-37625

Int. Cl. G01r *31/02, 19/16*

U.S. Cl. 324—133 **22 Claims**



An electronic circuit test equipment generates signals indicative of electrical conditions of a desired point in a circuit under test. The signals may be audible, light signals or combination of them.

3,805,156

WOOD SLOPE OF GRAIN INDICATOR

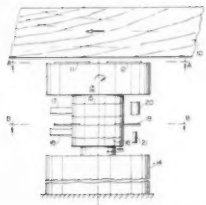
John A. P. Norton, Calgary, Alberta; Thomas A. McLaughlan, Vancouver, and Davor J. Kusec, Richmond, B.C., all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Apr. 19, 1973, Ser. No. 352,713

Claims priority, application Canada, June 29, 1972, 146037

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **9 Claims**



A method and apparatus for detecting wood grain slope by measuring the direction of the maximum and minimum electrical capacitance with respect to the axis of a piece of lumber. The method comprises rotating a pair of electrically energized capacitor plates closely adjacent a surface of the piece of lumber under test, measuring the sinusoidal variations in the capacitance value obtained as an analogue signal, comparing this signal as to phase with a reference signal related in frequency to the rotation of the capacitor plates, said phase relation being indicative of the direction of grain. The apparatus comprises a pair of spaced flat capacitor plates formed in the surface of a circular disc over which the wood workpiece would travel, means for rotating the disc at a precise rotation speed, means for measuring the sinusoidally varying capacitance in the form of a voltage, means for comparing the phase of this voltage with the phase of a reference AC voltage whose frequency is directly related to the rotation speed of the disc, and whose phase corresponds to zero slope-of-grain, means for measuring variations in phase displacement, said variations being directly related to variations of the grain slope of the wood from parallel to the wood piece axis. For three dimensional indicators two similar devices are placed at right angles such that two surfaces of the lumber are scanned at the same time.

3,805,157

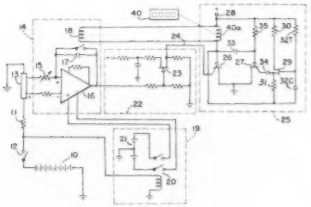
AMP-HOUR METER

Robert S. Acks, San Diego, and Joseph C. Quigley, Oxnerd, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1972, Ser. No. 316,190

Int. Cl. G01r *7/00;* **G01n** *27/42*

U.S. Cl. 324—141 **1 Claim**



A submersible having a bank of storage batteries for power is provided with a circuit giving crewmen a real-time indication of power used or power remaining in the batteries. A sensor element interposed in series with the load created by the submersible's machinery bleeds off a small sample of the load current which is proportional to the power drain of the machinery. An integrator circuit coupled to a unijunction transistor functions as a relaxation oscillator to generate pulses at a rate proportional to the magnitude of the load current and to pass them to a circuit for producing counter pulses. Counter pulses are coupled to a digital read-out for providing a visual indication of power used or power remaining in the batteries and also are fed-back to the integrator circuit to repeatedly reset it during the integration sequence. Increased reliability is ensured by the provision of a biasing-circuitry arrangement which is "on" only during the period when load current is being drawn from the bank of storage batteries.

3,805,158

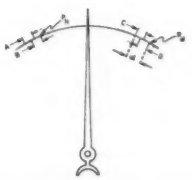
DEMAND METER WITH LIMIT INDICATOR

Jules Delisle; Pierre A. Deschenes, and Adrien Leroux, all of Sherbrooke, Quebec, Canada, assignors to Consulab Inc., Beauport, Quebec, Canada

Division of Ser. No. 140,671, May 6, 1971, Pat. No. 3,714,453. This application Sept. 26, 1972, Ser. No. 292,277

Int. Cl. G01n *1/00*

U.S. Cl. 324—157 **3 Claims**



The disclosure herein describes an improved load regulating system for selectively adding or dropping load circuits in a local electrical distribution system based on the power measured by the utility company and using a demand meter similar to the one installed by the utility company but modified to de-

tect information concerning the power consumed by the plant within preselected limits; the system further includes a decision circuit which is fed with the information received from the detecting apparatus and which feeds this information combined with synchronization pulses received from a clock mechanism to a selecting-cycling unit which, in turn, triggers actuators associated with the load circuits.

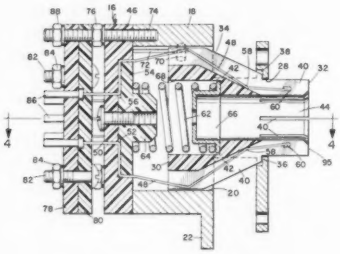
3,805,159
CONTACTOR UNIT FOR INTEGRATED CIRCUIT TESTING

Bernd H. Richelmann, San Diego, Calif., assignor to Delta Design, Inc., La Mesa, Calif.

Continuation of Ser. No. 855,582, Sept. 15, 1969, abandoned. This application Nov. 22, 1971, Ser. No. 201,231

Int. Cl. H01r *13/62, 13/50*

U.S. Cl. 324—158 F **8 Claims**



A contactor unit for making simultaneous contact with all connection leads of an integrated circuit component, particularly while in a test fixture such as an environmental chamber. Individual spring type contacts are biased to make contact with the leads and are normally held in retracted position by a spring loaded plunger. When an integrated circuit component is mounted in a special carrier and pressed against the plunger, the contacts extend to make the connections.

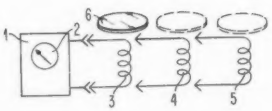
3,805,160
METHOD FOR NON-CONTACT SEMICONDUCTOR RESISTIVITY MEASUREMENT

John W. Philbrick, Poughkeepsie; Charles A. Pillus, Beacon; Michael R. Poponiak, Newburgh, and Christian P. Schneider, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,489

Int. Cl. G01r *31/26, 27/02*

U.S. Cl. 324—158 D **6 Claims**



The apparatus and technique discloses a method for measuring the resistivity of semiconductor material over several decades by varying the inductance of a RF energized coil and where the method is significantly independent of operating frequency, type of semiconductor material and the nature of the sample surface and surface and surface condition or preparation.

3,805,161
APPARATUS FOR SENSING SPEED

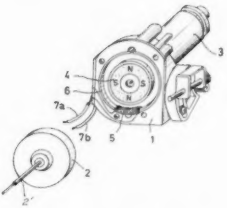
Wulf Bayha, and Walter Grozinger, both of Hofingen, Germany, assignors to Moto Meter GmbH, Leonberg/Wurtt., Germany

Filed July 12, 1972, Ser. No. 271,158

Claims priority, application Germany, July 17, 1971, 2135912

Int. Cl. G01p *3/56*

U.S. Cl. 324—161 **2 Claims**



An apparatus for sensing speed levels of a motor vehicle includes a rotatable magnet, preferably in the shape of a disc. A speedometer drive is arranged to rotate the magnet at an angular velocity related directly to the speed of the vehicle. A coil is positioned in the vicinity of the magnet and is operatively responsive to its magnetic field and thus produces an alternating voltage signal having a frequency related to the speed of the vehicle. A signal processing circuit is coupled to the coil and produces an output signal indicative of the speed of the vehicle in response to the alternating voltage signal received from the coil. The rotatable magnet and the speedometer drive may be parts of a conventional eddy current speedometer.

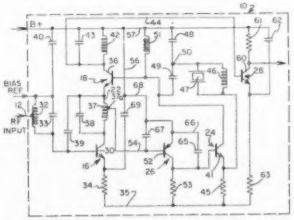
3,805,162
MINIATURE, LOW VOLTAGE, LOW CURRENT RECEIVER FRONT END

Clive Hoffmann, San Diego, Calif., and James McDonald, Downers Grove, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 180,719, Sept. 15, 1971, abandoned. This application Oct. 27, 1972, Ser. No. 301,610

Int. Cl. H04b *1/24*

U.S. Cl. 325—318 **34 Claims**



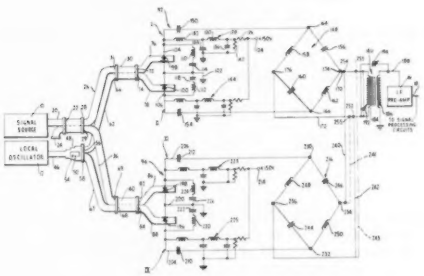
A receiver RF section or front end is provided with a mixer stage and an RF amplifier stage connected in series with one another for direct current energization from a power source. The mixer stage includes a transistor, the base and emitter electrodes of which constitute the inputs of the mixer stage, and a control transistor has its base-emitter junction connected in parallel with the base-emitter junction of the transistor in the mixer stage. The DC voltage drop across the base-emitter junctions of these transistors is used to control the output of an oscillator transistor. The oscillator transistor has an output electrode thereof direct current coupled to the

base electrode of the mixer transistor and the base electrode of the oscillator transistor is direct current coupled to an output electrode of the control transistor.

3,805,163
IMAGE REJECTION RECEIVER

Frank T. Hata, Los Angeles, and Thomas Hudspeth, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 1, 1959, Ser. No. 810,501
Int. Cl. G01s 7/36; H04b 1/26
U.S. Cl. 325—437 **8 Claims**

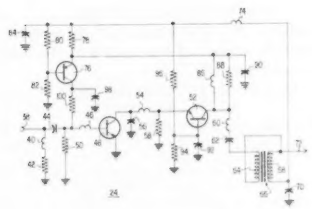


This invention relates to receivers for use in radar systems and particularly to a simplified and improved image rejection receiver which operates over a wide band of local oscillator frequency to remove undesired noise image signals.

3,805,164
TELEVISION PREAMPLIFIER

Garry R. Callaway, Indian Harbor Beach, Fla., assignor to 2-Bit Corporation, Melbourne, Fla.

Filed July 5, 1972, Ser. No. 269,208
Int. Cl. H04b 1/16
U.S. Cl. 325—373 **11 Claims**

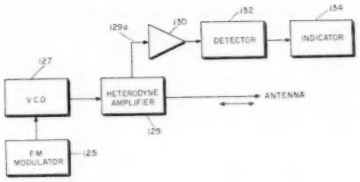


Disclosed is a broadband amplifier particularly adapted for use as a television VHF preamplifier in marginal television reception areas. It includes two RF type transistors connected in cascode for both DC and RF. A third transistor is used as a DC current source to provide a stable constant collector current for the RF transistors. The amplifier features low noise and low intermodulation distortion.

3,805,165
HETERODYNE AMPLIFIER CIRCUITS

Gary Robert Hoffman, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed June 8, 1972, Ser. No. 260,871
Int. Cl. H04b 1/28; G01s 9/44
U.S. Cl. 325—451 **1 Claim**

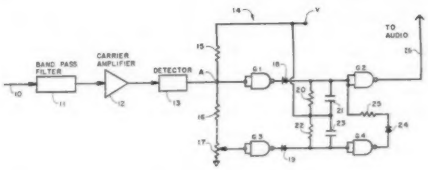


A nonlinear transmitter final RF amplifier is used as a mixer circuit to obtain the difference frequency between the transmitter RF frequency and a received offset frequency. The use of this circuit in radar altimeters is shown.

3,805,166
SQUELCH CIRCUIT WITH TIME CONSTANT CONTROLLED BY SIGNAL LEVEL

Alfredo E. Paredes, 2295 N.W. 14th St., Miami, Fla.

Filed Oct. 20, 1972, Ser. No. 299,269
Int. Cl. H04b 1/10
U.S. Cl. 325—478 **6 Claims**

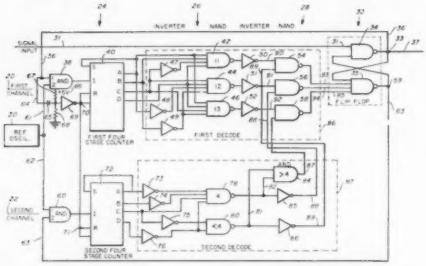


A variable time constant squelch circuit for radio receivers including means for distinguishing between relatively different levels of rectified noise proportional to incoming signal strength, and operative at low input signal levels to introduce a time constant substantially greater than is introduced upon reception of an incoming signal the level or strength of which is at or greater than a certain threshold value greater than that of said low input signal levels. A voltage divider at the input of the squelch circuit feeds rectified noise at different levels to respective first and second NAND gates, the outputs of which feed distinctive potentials to respective high and low level NAND output gates. The output of the high level NAND output gate is utilized to squelch the received audio signal. The output of the first NAND gate includes an RC time delay circuit operative to be charged to energizing potential upon the reception of any signal, whether weak or strong, to provide for time delay in squelch operation. The output of the low level NAND output gate comprises a series resistor circuit operative to be connected in parallel with the discharge resistor of the above-described time delay circuit only upon the reception of a signal providing an input to said second NAND gate at or greater than said threshold value, thereby substantially shortening the squelch time delay upon the discontinuance of incoming signals having high signal strength.

3,805,167
DIGITAL PULSE GENERATOR WITH AUTOMATIC DUTY CYCLE CONTROL

Charles D. Nash, Broken Arrow, and Martin Henry Beauford, Tulsa, both of Okla., assignors to The Telex Corporation, Tulsa, Okla.

Filed June 27, 1972, Ser. No. 266,713
Int. Cl. H03k *1/00, 3/04*
U.S. Cl. 328—61 **5 Claims**

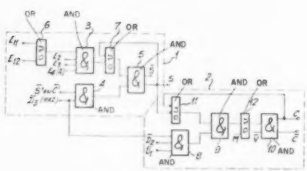


This invention relates to an electronic apparatus for creating rectangular pulses of a selected value of duty cycle and pulse rate, in response to the reception of a series of substantially equally spaced incoming impulses. The output rectangular pulse is provided by a flip-flop which is set by the incoming repetitive pulse. A clock provides a series of pulses, the frequency of which is some multiple of the frequency of the incoming pulse. Two counters are provided, one of which reads the counts in the first part cycle of the output pulse, the second counts the pulses in the second part cycle of the output pulse. The flip-flop is reset by a specific selected count on the first counter. When the selected count is reached, the flip-flop is reset which stops the count of the first counter and starts the counting on the second counter, which counts the clock pulses within the second part cycle of the output pulse. If the number of clock pulses in the second part cycle are equal to or less than or more than a selected number, logic means are provided to select one of three possible counts on the first counter, which on the next cycle will reset the counter.

3,805,168
CELL FOR SEQUENTIAL CIRCUITS AND CIRCUITS MADE WITH SUCH CELLS

Jean Marchand, 102 Avenue Georges Clemenceau, Nanterre, and Gerard Cottrez, 35 Rue Lamartine, Rueil-Malmaison, both of France

Filed Feb. 22, 1972, Ser. No. 229,216
Claims priority, application France, Feb. 22, 1971, 71.05942
Int. Cl. 307 *218;* **H03k** *17/02, 19/20*
U.S. Cl. 328—70 **7 Claims**

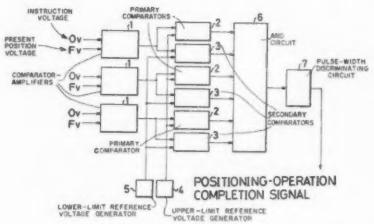


A system for asynchronous automation control, comprising a plurality of phase signal generating circuits interconnected with action signal generating circuits wherein the action signal generating circuits each comprise a first OR gate having an input connected to at least one output of a phase signal generating circuit, a first AND gate having an input connected to the first OR gate output and a further input normally receiving the logical complements of disabling signals, a second OR gate having an input connected to the first AND gate output and a further input for receiving a hand control signal, and a second AND gate having an input connected to the second OR gate output, a further input normally receiving the logical complement of a locking signal, and an output connected to a further input of the first OR gate.

3,805,169
CIRCUIT FOR CONFIRMING POSITIONING OPERATION

Kyohei Hayakawa; Hiroshi Maeda, both of Nagoya City, and Noritada Habara, Nishi-Kasugai-gun, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1972, Ser. No. 236,371
Int. Cl. H03k *5/153, 19/24*
U.S. Cl. 328—71 **5 Claims**

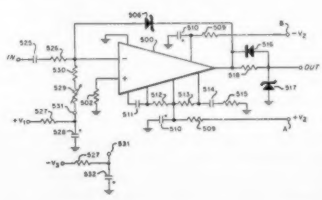


A circuit for confirming positioning operation comprising a plurality of comparator-amplifiers which compare instruction signals with present-position detection signals and provide the results as error signals, a plurality of primary comparators or a single primary comparator which compare or compares the plurality of error signals from the comparator-amplifiers or one of such detected signals having the maximum value with an upper-limit reference signal, a plurality of secondary comparators or a single secondary comparator which compare or compares the plurality of error signals from the comparator-amplifiers or one of such detected signals having the minimum value with a lower-limit reference signal, an AND circuit which ANDs the output signals from the primary and secondary comparators, and a pulse-width discriminating circuit which sends out a positioning-operation completion signal at the moment when the duration of the certain signal obtained from the AND circuit has become equal to a predetermined period of time.

3,805,170
TRANSITION DETECTOR

George J. Dusheck, Jr., Cinnaminson, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

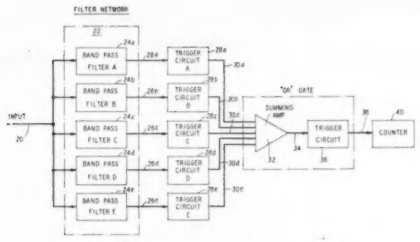
Filed Jan. 3, 1969, Ser. No. 788,877
Int. Cl. G01r *29/02*
U.S. Cl. 328—114 **6 Claims**



A transition detector to detect slopes in an analog input signal and produce digital outputs in response to whether or

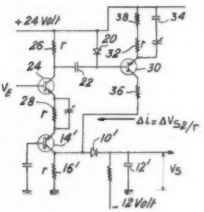
not such slopes are present. An analog signal is fed through a differentiating network and combined with a current source as the input to an operational amplifier that has a zener diode in the feedback system.

3,805,171
SIGNAL FREQUENCY DETECTION CIRCUIT
Ronald L. Drumheller, New York, N.Y., assignor to Eastech, Inc., South Plainfield, N.J.
Filed July 12, 1972, Ser. No. 270,997
Int. Cl. H03k *5/20*
U.S. Cl. 328—140 **7 Claims**



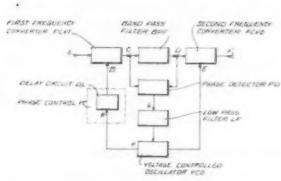
A circuit having a plurality of separate trigger circuits each being provided with the components of the signal which fall within a separate frequency band. Each trigger circuit is designed to trigger only when a signal occurs within the associated frequency band. The outputs of the trigger circuits drive an "OR" gate which in turn drives a counter. The circuit is particularly adapted for use in noisy applications where the signal level varies with frequency, such as for example with a flow meter.

3,805,172
DEVICE FOR STORING THE AMPLITUDE OF AN ELECTRIC SIGNAL
Jean-Pierre Barrot, Leognan; Christian Jaussein, Gradignan, and Andre Yastroubinski, Pessac-Alouette, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Apr. 18, 1972, Ser. No. 245,240
Claims priority, application France, Apr. 22, 1971, 71.14398
Int. Cl. G11c *11/24, 11/34*
U.S. Cl. 328—151 **9 Claims**



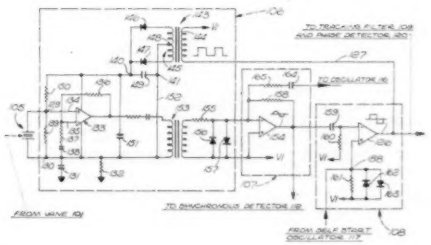
The device for storing the amplitude of an electric signal comprises a storage cell having a capacitor which is intended to be charged by the signal through a diode and means for reading the charging voltage. The device comprises a cell for correcting variations in dynamic resistance of the diode, the correction cell having the same electrical characteristics as the storage cell and being subjected to the same signals, and means for injecting upstream of the storage cell a current which is proportional to the error voltage arising from the current which passes through the diode.

3,805,173
BAND PASS FILTER AND PHASE CONTROL CIRCUIT ELIMINATING PHASE DIFFERENCES BETWEEN INPUT AND OUTPUT
Hiroshi Nakamura, Sagamihara; Hiroaki Oyama, Tokyo; Tadayoshi Kato, Kawasaki, and Tokihiro Miyo, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed June 12, 1973, Ser. No. 369,254
Claims priority, application Japan, June 14, 1972, 47-59153
Int. Cl. H03b *3/06*
U.S. Cl. 328—155 **5 Claims**



A band pass filter circuit for a band pass filter comprises a phase detector connected to the band pass filter for determining the difference in phase between input and output signals of the band pass filter. A voltage controlled oscillator coupled to the phase detector has a frequency of oscillation controlled by detection output signals of the phase detector. A first frequency converter is connected to the input of the band pass filter. Input signals are supplied to the first frequency converter. A second frequency converter is connected to the output of the band pass filter and to the voltage controlled oscillator and provides an output signal. A phase control circuit connected between the voltage controlled oscillator and the first frequency converter varies the phase of output signals of the voltage controlled oscillator and controls the frequency conversion of the first frequency converter in accordance therewith.

3,805,174
TRANSFORMER COUPLED SIGNAL POWER FEEDBACK CIRCUIT
Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Division of Ser. No. 161,025, July 9, 1971, Pat. No. 3,776,024. This application Nov. 22, 1972, Ser. No. 308,759
Int. Cl. H01j *19/82*
U.S. Cl. 328—261 **4 Claims**


TO TRACKING FILTER 108 AND PHASE DETECTOR 120
TO OSCILLATOR 116
FROM VANE 104
TO SYNCHRONOUS DETECTOR 122
FROM SELF START OSCILLATOR 117

An alternating signal is transformer coupled to an input circuit with rectification to provide an isolated source of potential without the use of a power supply.

3,805,175

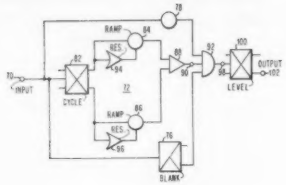
RETROSPECTIVE PULSE MODULATION DECODING METHOD AND APPARATUS

Ernie George Nassimbene, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 183,839, Sept. 27, 1971, Pat. No. 3,763,353, which is a division of Ser. No. 31,959, April 27, 1970, Pat. No. 3,708,748. This application Sept. 25, 1972, Ser. No. 292,006

Int. Cl. H03k 3/02

U.S. Cl. 329—104 **14 Claims**



Digital data in self-timing reference is free from error due to irregular data spacing because of variations in speed and/or direction of scan in manual or machine applications with a pulse modulation of retrospective nature. Initially reference data manifestations are established and thereafter digital data are established partly on the basis of preceding manifestations of the data. In a binary data translating system, for example, a pair of reference pulses are spaced apart by a given interval. A binary unit is thereafter manifested by a pulse following at the same or similar interval and a binary zero is manifested by a pulse following at a differing interval. Each manifestation of a binary number thereafter depends on the interval between preceding pulses. A principle advantage of retrospective pulse modulation lies in demodulation. Large variations in the spacing and relatively larger variations in the scanning speed are accommodated readily. Simple methods using circuit demodulating means are applied for measuring intervals between successive pulses and for comparing the measurements successively, indicating data of one nature or number by equal measurements and data of another by unequal measurements. Methods using basic analog circuitry are described; methods using digital circuitry are suggested.

3,805,176

MICROWAVE CIRCUIT

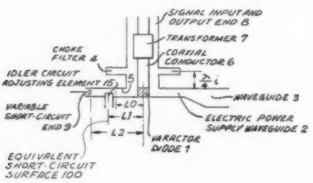
Tatsuo Kudo, Kawasaki, and Koichi Kurachi, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 162,340, July 14, 1971, abandoned. This application Mar. 9, 1973, Ser. No. 339,882

Claims priority, application Japan, July 22, 1970, 45-64202

Int. Cl. H03f 7/04

U.S. Cl. 330—4.9 **5 Claims**



A microwave circuit comprises a waveguide which prevents the passage of the idler frequency. A coaxial line extends from the waveguide substantially perpendicular to the waveguide. A varactor is mounted in the waveguide at the intersection of the waveguide and the coaxial line. Short-circuit means provides an equivalent short-circuit surface in the waveguide at approximately a quarter wavelength from the diode. An idler circuit comprises the inductance exhibited by the waveguide. Idler circuit adjusting means is provided in the waveguide at more than a quarter wavelength of the idler frequency for adjusting the idler frequency. The idler circuit is a resonant circuit which resonates at a frequency higher than the self-resonant frequency of the diode.

3,805,177

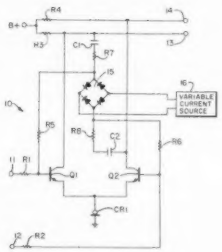
AMPLIFIER CIRCUIT HAVING VARIABLE AUTOMATIC GAIN CONTROL

Curtis A. Risley, Snyder, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,350

Int. Cl. H03g 3/30

U.S. Cl. 330—29 **7 Claims**



Balanced differential amplifier having two transistors. A feedback network including a first resistance, a diode-bridge variable attenuator (vario-losser) and a second resistance are connected in series between the collectors of the transistors. Feedback is taken from the juncture of the first resistance and the diode-bridge variable attenuator to the base of one transistor and from the juncture of the second resistance and the diode-bridge variable attenuator to the base of the other transistor. The resistance of the diode-bridge variable attenuator is inversely related to the DC current passing through it. Thus, the proportion of the differential output between the collectors fed back to the bases can be controlled by controlling the DC current providing variable automatic gain control of the amplifier.

3,805,178

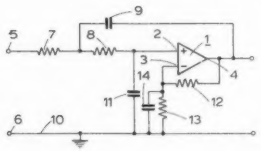
RC ACTIVE FILTER CIRCUIT

John Mortimer Rollett, Ealing, England, assignor to The Post Office, London, England

Filed Aug. 25, 1972, Ser. No. 283,772

Int. Cl. H03f 1/36

U.S. Cl. 330—107 **8 Claims**



The invention comprises an RC active filter circuit, which includes an operational amplifier, and which depending on the circuit topography may function as either a band-pass, or low-pass filter. The circuit has a capacitive network connected between the inverting input of the operational amplifier and earth. This network in conjunction with the feedback network

operates to make the feedback, frequency dependent. The frequency dependence of the feedback is adjusted to compensate for variations in the gain of the amplifier with frequency, to give a working range in which the closed loop gain of the amplifier is independent of the frequency.

3,805,179

OSCILLATION MAINTENANCE METHOD FOR MECHANICAL RESONATOR AND RELATED APPARATUS

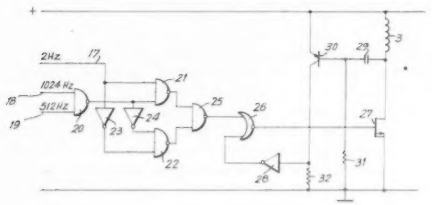
Jean-Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S.A., Lausanne, Switzerland

Filed Sept. 25, 1972, Ser. No. 292,166

Claims priority, application Switzerland, Sept. 24, 1971, 13975/71

Int. Cl. H03b *3/04*

U.S. Cl. 331—1 A **6 Claims**



A technique is provided for oscillation maintenance in mechanical resonators of the type actuated by electric pulses transmitted by a coil to a permanent magnet carried by the resonator or conversely, the oscillation frequency of the resonator being modified by the action of a spring repelling it elastically on both sides of its resting position. Starting from a train of chopped (contact-modulated) square-wave pulses varying according to a tempo corresponding to a pilot frequency f in such manner that, for each succeeding alternation of this latter, the pulses are divided so as to correspond alternatively to one of two energies of different levels. The voltages induced by the resonator magnet in the induction coil is compared to the aforesaid pulse train and so acts that each successive alternation of a given signal of said voltage, beyond a preset threshold, triggers the transmission to the induction coil of a maintenance energy of the value contained in the equivalent section of the pulse train. The purpose is to establish a state of synchronism between the pilot frequency f and that of the mechanical oscillation.

3,805,180

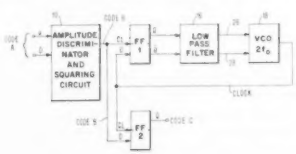
BINARY-CODED SIGNAL TIMING RECOVERY CIRCUIT

Albert X. Widmer, 38 Craton Lake Rd., Katonah, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,971

Int. Cl. H03b *3/04*

U.S. Cl. 331—1 A **7 Claims**



A binary-coded signal timing recovery circuit in which an input binary-coded signal is amplitude limited and then applied directly to the clock terminal of a first-edge-triggered, D-type flip-flop which is triggered by polarity transitions of the input signal immediately to set the output of the flip-flop to a maximum level having the polarity of a clock signal derived from a voltage controlled oscillator. The clock signal polarity at the time the flip-flop is triggered immediately indicates whether the input signal timing is early or late relative to the clock signal. A low pass filter averages the output of the flip-flop to provide a control voltage to the oscillator to adjust the frequency thereof and bring the clock signal into synchronism with the input signal. A second-edge-triggered, D-type flip-flop is triggered by the polarity transitions of the clock signal so that the output level of the second flip-flop has the same polarity as that of the input signal at the time the second flip-flop is triggered. The output of the second flip-flop represents the reconstructed or recovered binary-coded signal.

3,805,181

FREQUENCY SYNTHESIZER WITH MULTIPLE CONTROL LOOPS

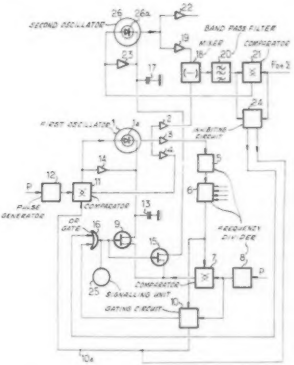
Roger Charbonnier, Meudon, France, assignor to Adret Electronique, Trappes, France

Filed June 28, 1972, Ser. No. 267,166

Claims priority, application France, June 29, 1971, 71.23658; June 14, 1972, 7221527

Int. Cl. H03b *3/06*

U.S. Cl. 331—2 **7 Claims**



Frequency synthesizer capable of generating NP + δ, P being a predetermined step of frequency, N a variable integer and δ a variable increment.

A first oscillator (31) is a slave on to NP and a second oscillator (32) is commanded by the tension of command which enslaves the first, in such a way that its frequency be roughly equal to NP + δ. After this analogical frequency approach, the second oscillator is submitted to a fine subjection by phase-locking technique. The increment δ and the distance between the output frequencies of the two oscillators are divided by a fixed ratio (dividers 54,55) to facilitate the putting into steps of the second oscillator. Application to television synthesizers.

3,805,182

DEVICE FOR CONTROLLING THE FREQUENCY AND PHASE OF AN OSCILLATOR

Domenic Melcher, Bonstellenstr 56, Uster, Switzerland

Filed Aug. 22, 1972, Ser. No. 282,868

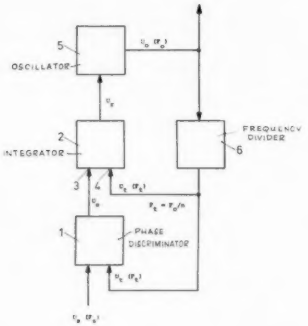
Claims priority, application Switzerland, May 24, 1972, 7685/72

Int. Cl. H03b *3/04*

U.S. Cl. 331—16 **3 Claims**

The present invention relates to a device for controlling the frequency and phase of an oscillator, preferably within a wide range of frequencies. Such devices serve, for instance, to divide a control frequency by a given factor and to hold this submultiple frequency after as short as possible a regulating time

within a given phase relationship with the control frequency. It is the object of the present invention to synchronize the frequency of a local oscillator in phase with the frequency of a master oscillator in such a way that the response to control is quick and effective throughout a wide range of frequencies, i.e., over many octaves, and the frequency of the local oscillator is preferably a submultiple of the frequency of the master oscillator. The arrangement proposed by the invention is characterised in that the control circuit comprises an outer and an inner loop, the outer loop containing a phase discriminator, a difference integrator, a voltage-controlled oscillating circuit and a frequency divider, whereas the inner loop comprises only the difference integrator, the voltage-controlled oscillating circuit and the frequency divider and these



loops functionally cooperate in that the phase discriminator uses the original control signal U_s of frequency F_s and the divided frequency signal U_f of frequency F_f of the voltage-controlled oscillating circuit to form a signal U_r containing the information relating to the phase difference between the two signals, whereas the difference integrator uses the RC-averaged signal U_r and the likewise RC-averaged signal U_f from the inner loop to form the true integral of their difference, which in the form of a signal U_r feeds the voltage-dependent oscillating circuit which provides the signal U_o of the frequency F_o which simultaneously feeds the user and the frequency divider which applies the signal U_o after division by the factor n as a signal U_f of the frequency F_f to both the phase discriminator in the outer loop and the difference integrator in the inner loop.

3,805,183

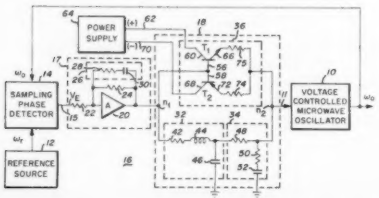
DUAL BANDWIDTH PHASE LOCK LOOP

Drew R. Lance, Saratoga, Calif., assignor to California Microwave Incorporated, Sunnyvale, Calif.

Filed Nov. 6, 1972, Ser. No. 304,136

Int. Cl. H03b *3/06*

U.S. Cl. 331—18 **9 Claims**



A phase lock loop in which the DC error signal output of a phase detector is coupled to the control input of a voltage controlled microwave oscillator through a signal translating circuit including an operational amplifier and an adaptive control network. The adaptive control network includes roll-off filter circuitry for defining the normal loop bandwidth, and a voltage follower circuit for overriding the roll-off circuits when the loop stress reaches a predetermined level and for developing a signal proportional to the error signal to thereby automatically increase the control capability of the loop.

3,805,184

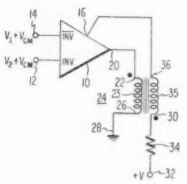
GATED ASTABLE MULTIVIBRATOR

Armando Joseph Visioli, Jr., Dover, and Harold Allen Wittlinger, Pennington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 9, 1973, Ser. No. 377,439

Int. Cl. H03b *5/24*; **H03k** *17/30*

U.S. Cl. 331—65 **13 Claims**



A gain controlled differential amplifier and a feedback circuit connecting the output terminal of the amplifier to its gain control terminal. When the input signals to the amplifier differ in one sense, the feedback signal produced is regenerative and oscillations result. When the input signals differ in the opposite sense, the feedback becomes degenerative and the output signal stabilizes at a fixed value.

3,805,185

SWITCHING OSCILLATOR CONTROLLED BY A MOVING METAL PIECE

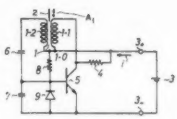
Yasunori Kishi; Kunio Kobayashi, both of Tokyo; Masami Yamaguchi, Sagamihara, and Tsuneo Okamoto, Tokyo, all of Japan, assignors to Stanley Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 27, 1973, Ser. No. 373,969

Claims priority, application Japan, July 5, 1972, 47-66713; July 5, 1972, 47-66714; July 5, 1972, 47-66715; July 5, 1972, 47-66716

Int. Cl. G08c *21/00*; **H03b** *5/12*

U.S. Cl. 331—65 **6 Claims**



A proximity switch using an oscillator with a divided oscillation winding into which a metal control piece is moved to start and stop oscillations for changing the level of current in the circuit. The center tap of the two parts of the winding is connected to a DC source, a first parallel circuit comprising an oscillation transistor, and a bias circuit; and the opposite ends of the coils are connected across the oscillation transistor and DC source so that the degree of inductive coupling between the coils as controlled by the penetration distance of the metal piece between the coils produces abrupt start and cessation of oscillations in the circuit and corresponding changes in circuit current. Temperature induced hysteresis fluctuations are compensated by use of a temperature responsive bias resistor,

an oscillation winding core with a temperature-responsive permeability characteristic, or bimetal flux-shunting strips adjacent to the oscillation windings.

3,805,186

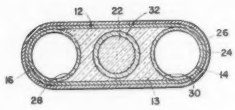
UNITARY GLASS LASER ASSEMBLY

Richard F. Woodcock, South Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 29, 1972, Ser. No. 310,633

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 E **3 Claims**



A unitary laser rod configuration provides improved optical coupling between the flashlamps and the activated laser rod where the active substance in the laser rod is trivalent erbium ions. The components are arranged in a "double-U" laser configuration wherein the centrally located laser rod is surrounded by an annular cladding of sensitizing material. The core with its sensitizing cladding is then immersed in a clear glass outer cladding which forms the remainder of the unitary double-U configuration. This configuration provides optimal efficiency.

3,805,187

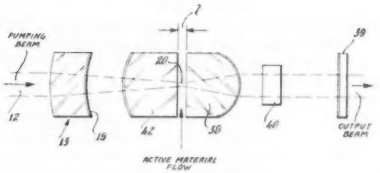
DAMAGE RESISTANT TUNABLE CW DYELASER

Alexander Lempicki, Wayland, Mass.; Ralph R. Jacobs, Livermore, Calif., and Harold Samelson, Wayland, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 17, 1972, Ser. No. 307,610

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **10 Claims**



A damage resistant tunable continuous wave (cw) dye laser comprising a hydro-dynamically contoured interaction region, with a thick input window which is coated to be optically inert to the pumping laser, and a thick output window which is contoured as a lens to emit parallel rays of laser energy. The dye laser is so constructed as to be pumped by a cw laser source whose energy is concentrated in a small area or spot. The intense energy produced by narrowing the pumping laser to a spot produces damaging effects on materials close to the focal point of the pumping laser. Such damaging effects are reduced by removing the damagable materials such as anti-reflective (ar) coatings or mirror systems away from the focal point of the pumping laser because the energy of the laser is spread over a larger area. When the laser energy is distributed over a larger area the energy per square surface area is thereby reduced to a tolerable amount. The pumping laser is focused to a narrow spot within the interaction region of a turbulently flowing liquid dye material, thereby producing a population inversion within the dye material which in turn creates laser action.

3,805,188

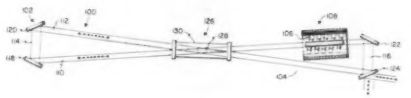
SINGLE MODE LASER OSCILLATOR WITH RING RESONATOR AND INTERNAL MODE SELECTING DYE CELL

Ralph F. Wuerker, Palos Verdes Estates, and Lee O. Heflinger, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 30, 1972, Ser. No. 310,868

Int. Cl. H01s *3/05, 3/00, 3/11*

U.S. Cl. 331—94.5 **13 Claims**



A standing light wave within the active lasing medium of a laser oscillator is avoided, to prevent periodic bleaching of the medium and thereby foster single mode oscillation and improve coherence. The coherent light propagating from each end of the lasing medium is directed to the opposite end of the medium through a ring resonator cavity with an optically folded portion having a region through which the light waves propagating in each direction around the cavity travel first in one direction and then in the opposite direction in interfering relation to one another to produce a standing wave in the region. Located within this standing wave region is a bleachable mode selector, such as a dye cell, which is bleached by the first oscillating mode propagating in either direction through the resonator cavity to suppress counter rotating oscillating modes which would interfer with the first oscillating mode within the lasing medium to produce a standing wave in the medium.

3,805,189

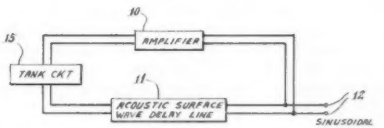
OSCILLATORS USING SURFACE ACOUSTIC WAVE DELAY LINE

Joseph Zucker, Peabody, and John Matarese, New City, both of N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed , Ser. No. 309,836

Int. Cl. H03b *5/12*

U.S. Cl. 331—107 A **9 Claims**

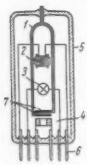


A stable sine wave oscillator is disclosed in which the frequency is controlled by a surface wave acoustic delay line in the oscillator feedback circuit. The oscillator is capable of operating at discrete frequencies within the wide bandpass of the acoustic surface wave delay line for which an integral number of wave lengths exist on the line.

3,805,190
PHOTOELECTRIC DEVICE FOR GENERATING AND FILTERING LOW-FREQUENCY HARMONIC OSCILLATIONS

German Semenovich Berlin, 5 Parkovaya ulitsa 42, kv. 95; Nikolai Akimovich Potapov, 2 Sokolnicheskaya ulitsa, 8, kv. 7, and Dmitry Dmitrievich Shenker, Oxkaya ulitsa, 28, kv. 29, all of Moscow, U.S.S.R.

Filed Oct. 18, 1972, Ser. No. 298,633
Int. Cl. H03b *5/30;* **H03h** *9/00*
U.S. Cl. 331—116 M **2 Claims**

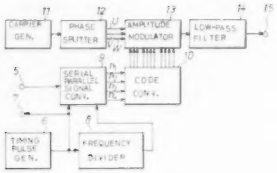


Photoelectric device for generating low-frequency harmonic oscillation, comprising a mechanical oscillator and an electromechanical drive, the latter being in the form of a coil with a magnetized core, for exciting the oscillator, a source of light and a photoelectric transducer making up a system for measuring the oscillation, wherein the mechanical oscillator is in the form of a tuning fork, there being positioned in the path of the light flux from the source of light toward the transducer e.g., a photodiode, at least one pair of grids of which one is rigidly connected with one of the tines of the tuning fork. The device is useful as an oscillator and as a filter.

3,805,191
PHASE-AMPLITUDE MULTIPLE DIGITAL MODULATION SYSTEM

Kazuo Kawai; Sotokichi Shintani, both of Tokyo, and Hidetaka Yanagidaira, Omiya, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1972, Ser. No. 224,451
Claims priority, application Japan, Feb. 10, 1971, 46-5282
Int. Cl. H03k *7/10*
U.S. Cl. 332—9 R **6 Claims**

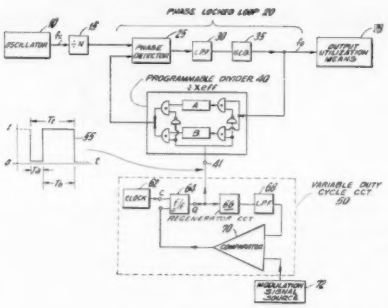


A digital modulation system for modulating the phase and the amplitude of a carrier in accordance with multi-value digital code units so as to produce a phase-amplitude modulated wave, so that respective pointed ends of signal vectors corresponding to possible multi-values of the phase-amplitude modulated wave are positioned at respective centers of regular hexagons predetermined so as to correspond to possible multi-values of the multivalue digital code units from a plurality of regular hexagons, which are closely positioned to one another without leaving any space in a honeycombed fashion near the original point of a polar coordinate on the polar coordinate plane.

3,805,192
FREQUENCY MODULATOR-VARIABLE FREQUENCY GENERATOR

Frank Joseph Ocnaschek, and Eugene Robert Wade, both of St. Petersburg, Fla., assignors to Electronic Communications, Inc., St. Petersburg, Fla.

Filed Aug. 9, 1972, Ser. No. 279,280
Int. Cl. H03c *3/02;* **H03b** *3/04*
U.S. Cl. 332—16 R **9 Claims**



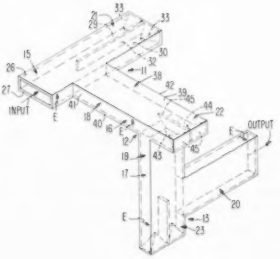
A frequency modulator/variable frequency source employs an electronically programmable divider in the feedback path of a phase locked loop. The phase locked loop is stabilized by the output of a fixed frequency oscillator. The effective divider modulus is directly determined by a variable duty cycle signal which alternately switches the divider between two characteristic count capacities with relative dwell periods determined by a modulating potential.

The output wave frequency is determined by the product of the fixed oscillator frequency and the effective feedback divider modulus, and thus varies directly with modulating potential.

3,805,193
MICROWAVE HARMONIC FILTER EMPLOYING CASCADED ALTERNATE E-PLANE AND H-PLANE T-JUNCTIONS

Hans Jacob Mohr, 1509 Fordham Way, Mountain View, Calif.

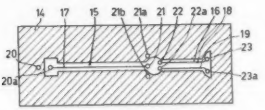
Filed Mar. 5, 1973, Ser. No. 337,972
Int. Cl. H01p *1/20, 5/12*
U.S. Cl. 333—6 **11 Claims**



A plurality of cascaded alternate E-plane and H-plane T-junctions pass the fundamental of a microwave signal fed thereto while substantially attenuating harmonics of the fundamental. Each of the junctions includes an input arm responsive to the wave, an output arm at right angles to the input arm and a further arm aligned with the input arm. The further arm includes parallel waveguides for preventing substantial propagation of the fundamental while providing propagation

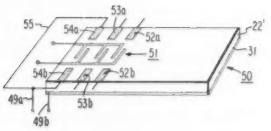
of the harmonics. At the end of each of the parallel waveguides a microwave absorber is provided to substantially attenuate the harmonics.

3,805,194
CIRCUIT WIRING ARRANGEMENTS
Kenneth William Moulding, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 108,420, Jan. 21, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,300
Int. Cl. H03h *7/42*
U.S. Cl. 333—25 **3 Claims**



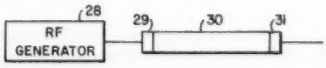
An arrangement for the input and output ports of a two port circuit element comprising a conductor arranged symmetrically between grounded conductors to form a symmetrical balanced circuit coupled to the other port of the element.

3,805,195
ADAPTIVE SURFACE WAVE DEVICES
Arthur Miller, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 22, 1972, Ser. No. 317,718
Int. Cl. H03h *7/30, 9/30;* **H03k** *13/02*
U.S. Cl. 333—30 R **8 Claims**



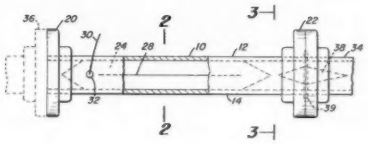
A surface wave acoustic device which comprises a plurality of input and/or output electrodes in contact with the surface of a ferroelectric material which exhibits piezoelectric properties. The sign of the piezoelectric coefficient of the ferroelectric material between selected electrode pairs, and therefore the relative phasing of each electrode pair, is determined by controlling the ferroelectric polarization in the region of each electrode pair. Control of the ferroelectric polarization is accomplished by switching the ferroelectric material between two states of remanent polarization.

3,805,196
ACOUSTO-OPTICAL SYSTEMS
John D. Feichtner, 4725 Millstream Dr., Murrysville, Pa.; Milton Gottlieb, 2310 Marbury Rd., Pittsburgh, Pa., and George W. Roland, 1176 Bucknell Dr., Monroeville, Pa.
Division of Ser. No. 209,849, Dec. 20, 1971, Pat. No. 3,746,886. This application Apr. 17, 1973, Ser. No. 351,919
Int. Cl. H03h *7/30, 9/30*
U.S. Cl. 333—30 R **3 Claims**



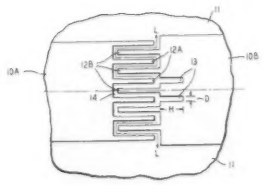
An acousto-optical system which diffracts or modulates light passing through a crystal of Tl_3AsSe_3 by means of sound waves in the crystal is disclosed. Sound waves are generated in the crystal by means of a transducer connected to an RF generator. The acousto-optical system may be in the form of a display device, a laser modulator, or other devices. An acoustic delay line using a crystal of Tl_3AsSe_3 is also disclosed.

3,805,197
APPARATUS AND METHOD FOR SHIFTING THE PHASE OF MICROWAVES
Harold T. Buscher, Albuquerque, N. Mex., assignor to General Dynamics Corporation, St. Louis, Mo.
Filed Mar. 23, 1973, Ser. No. 344,462
Int. Cl. H03h *7/36;* **H01p** *1/18*
U.S. Cl. 333—31 A **18 Claims**



Microwave phase shift is obtained by using a liquid dielectric provided by a polymer solution through which the microwaves propagate and across which a controllable electric field is established.

3,805,198
RESONANCE CONTROL IN INTERDIGITAL CAPACITORS USEFUL AS DC BREAKS IN DIODE OSCILLATOR CIRCUITS
James Walter Gewartowski, Allentown, and Isamu Tatsuguchi, Center Valley, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 28, 1972, Ser. No. 283,984
Int. Cl. H01p *3/08, 7/00*
U.S. Cl. 333—73 S **8 Claims**

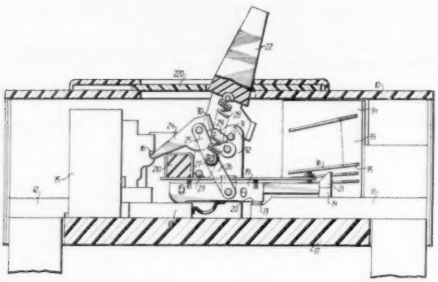


A modified stripline interdigital capacitor has slots coupled into the capacitor gap. These slots provide reactive loading to the slot transmission line formed by the gap. They are positioned and dimensioned to shift the frequency of the slot line resonance so that it is out of a selected frequency band without affecting the capacitance of the structure. This interdigital structure may be used in diode oscillator circuits to provide a dc block for isolating the input and output from the diode bias.

3,805,199
MOLDED CASE CIRCUIT BREAKER
Sutoru Tazuki, Takamatsu, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan
Filed Oct. 30, 1972, Ser. No. 302,297
Int. Cl. H01h *3/46*
U.S. Cl. 335—191 **3 Claims**

A molded case circuit breaker comprising a contact arm movable between circuit closed and open positions, a collapsible mechanism including a releasable member having one end

normally engaged with a latch member of an automatic trip unit, a pair of toggle links provided between the movable contact arm and the releasable member, and a tension spring stretched between a manually operable handle and a toggle knee of the toggle links, the other end of the releasable



member having a wedge member swingably mounted thereto. When an automatic trip occurs, the wedge member slidably enters between one of the toggle links and a stationary pin secured to the molded case to prevent the contact arm from rebounding toward its circuit closed position.

3,805,200

ELECTROMAGNETIC SWITCH DEVICE

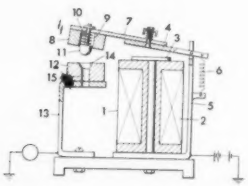
Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Pref., Japan

Filed July 14, 1972, Ser. No. 271,888

Claims priority, application Japan, July 16, 1971, 46/63348

Int. Cl. H01h *9/38*

U.S. Cl. 335—201 **8 Claims**



An improved electromagnetic switch device capable of remarkably reducing the arcs which would be produced at the time of opening and closing of the switch. The switch is provided with an arc-cutting contact in either one of the movable and fixed main contacts, the arc-cutting contact being retractively protruded outwardly beyond the contacting surface of the main contact in which it is provided, so that the arc-cutting contact comes into contact with the opposing main contact prior to the engagement of the main contacts, through which the switch is brought into on-operation, while the arc-cutting contact comes out of contact with the opposing main contact after disengagement of the main contacts by which the switch is brought into off-operation.

3,805,201

HERMETICALLY SEALED OVERCURRENT RELAY

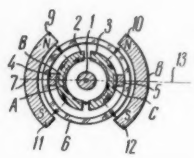
Vadim Nikolaevich Shoffa, ulitsa Tashkentskaya 15/22, kv. 288, Moscow, U.S.S.R.

Filed Feb. 5, 1973, Ser. No. 329,577

Claims priority, application U.S.S.R., Mar. 27, 1972, 1762610

Int. Cl. H01h *53/10*

U.S. Cl. 335—204 **1 Claim**



A hermetically sealed overcurrent relay comprising, according to the invention, a central conductor extending therethrough, magnetically operated contacts mounted on contact springs, embracing the central conductor and placed in a glass envelope, as well as two permanent magnets embracing the magnetically operated contacts and mounted movably relative thereto, the like poles of said permanent magnets being disposed on one side of the neutral section plane of the latter.

3,805,202

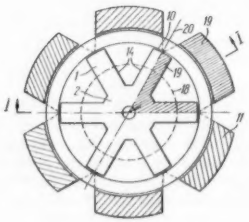
BETATRON ELECTROMAGNET

Vladimir Lukyanovich Chakhlov, pereulok Zavodskoi, 8/1, kv. 6; Alexandr Akimovich Zvontsov, ulitsa Vershinina, 37, kv. 237, and Anatoly Alexeevich Filimonov, ulitsa Usova, 17, kv. 405, all of Tomsk, U.S.S.R.

Filed June 8, 1972, Ser. No. 260,736

Int. Cl. H01f *7/06*

U.S. Cl. 335—210 **6 Claims**



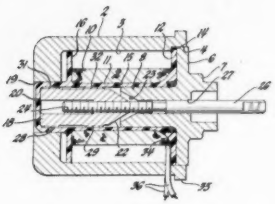
A betatron electromagnet which comprises a magnetic circuit with pole pieces restricting an operating zone for mounting a betatron vacuum chamber and each having a solid central part and at least three ribs protruding from the central part but not exceeding the limits of the operating zone, and a field winding.

3,805,203

ELECTROMAGNETIC THRUSTERS

John I. Deckard, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 30, 1973, Ser. No. 327,958
Int. Cl. H01f 7/18
U.S. Cl. 335—239 3 Claims



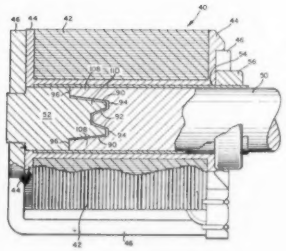
Solenoid devices intended primarily to exert a force closely proportional to energizing current and particularly adapted for use in fluid pressure and flow controlling systems. The device includes an annular housing of magnetic material enclosing a nonmagnetic bobbin on which a coil is wound. An armature reciprocable within the bobbin in proximity to a pole piece of the housing exerts a force on a plunger extending through the pole piece. The controlled fluid may communicate with the interior of the bobbin; one end of the bobbin is closed and the other end is sealed to the housing so that the fluid may not escape from the device.

3,805,204

TRACTIVE ELECTROMAGNETIC DEVICE

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 21, 1972, Ser. No. 245,884
Int. Cl. H01f 7/08
U.S. Cl. 335—255 27 Claims



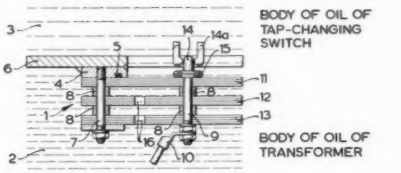
A solenoid for use within the exposure control system of a thin, compact automatic camera. The solenoid develops a desirable flat force-stroke characteristic while operating under limited power supplies. To achieve this necessary characteristic, the confronting end faces of the armatures of the solenoid are configured to form peripherally disposed extensions and complementary recesses having corresponding relatively shallow conical confronting surfaces. Additionally, the end faces are formed to provide peripherally disposed seating surfaces to permit nested holding forces under significantly reduced current levels.

3,805,205

MEANS FOR SEPARATING THE BODY OF OIL OF A TRANSFORMER AND THE BODY OF OIL OF A TAP-CHANGING SWITCH

Alexander Bleibtreu, Roter Brachweg 65, 841 Regensbury, Germany

Filed Mar. 7, 1973, Ser. No. 338,778
Claims priority, application Germany, May 26, 1972, 2225072
Int. Cl. H01f 27/04
U.S. Cl. 336—94 7 Claims



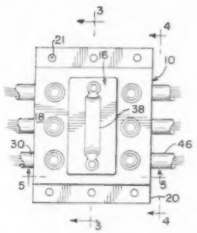
The body of oil in which a transformer is immersed and the body of oil in which tap-changing switching means are immersed are separated by a plurality of stacked, spaced insulating plates maintained by fixed intermediate spacers in the spaced positions thereof.

3,805,206

SWITCH

Hans Ege, Des Plaines, Ill., assignor to Underwriters Safety Device Co., Chicago, Ill.

Filed June 13, 1973, Ser. No. 369,566
Int. Cl. H05h 85/00
U.S. Cl. 337—9 10 Claims



An economical switch utilizing a triple function extrusion which is preferably immovably confined in an insulating housing is disclosed. The extrusion provides connector, terminal, and contact functions. Two preferred embodiments are disclosed. One disclosed embodiment is a switch comprising a pair of contact-terminals which are secured with respect to a base and which are physically separated by an insulating barrier fixed to said base and which are electrically connected by a straddle-saddle connecting element comprising an elongated conductor having at the ends thereof a pair of electrically connecting saddle portions extending downwardly on either side of said barrier, and contacting the respective contact-terminals, said end saddles being electrically connected by a connecting base portion thereof which bridges said barrier.

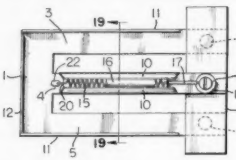
In a second embodiment, a switch in accordance with this invention is adapted as part of a cartridge-fuse panel.

3,805,207

THERMORESPONSIVE SWITCH ACTUATOR

Charles Grimshaw, Fulton, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 8, 1972, Ser. No. 251,407
Int. Cl. H01h *61/00*
U.S. Cl. 337—89 **4 Claims**



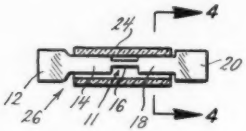
A thermoresponsive switch actuator is disclosed comprising a bridge to which a switch contact may be mounted, and three mutually spaced legs extending from the bridge with one leg extending in spaced relation between the two other legs. Means are provided for mounting portions of the three legs distal the bridge with the one leg spring biased in a predetermined direction aginst the bridge, and with the two other legs spring biased against the bridge in a direction opposite the predetermined direction. Means also are provided for producing a temperature differential between the one leg and the two other legs to alter the magnitude of spring bias exerted by the three legs against the bridge and thereby cause the bridge to move.

3,805,208

PROTECTOR FOR ELECTRIC CIRCUITS

Craig L. McAlister, 8951 Midland, St. Louis, Mo.

Filed June 14, 1973, Ser. No. 369,869
Int. Cl. H01h *85/08*
U.S. Cl. 337—228 **15 Claims**



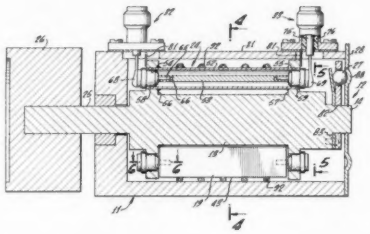
An electric fuse, which can carry current continuously in a location where the temperature is quite high, has a fusible element that is enclosed by, but that can freely expand and contract relative to, a tubular casing. That fusible element is a metal stamping of rectangular cross section; and hence it will respond to temperature-induced elongation thereof to deflect in a plane which is disposed at right angles to the wide surface thereof. The fusible element is relieved of potentially hurtful stresses by making the inner radius of the tubular casing at least as great as the square root of the sum of $(W/2)^2$ and $[(D/2+T/2)]^2$, where T is the thickness of the fusible element, where W is the width of that part of the fusible element which is enclosed by the tubular casing and which would be the first part of the fusible element that could respond to deflection of the fusible element, toward the inner surface of the tubular casing, to engage that inner surface, and where D is the maximum deflection which that part of the fusible element could experience if the edges of the uppermost surface of that part were in engagement with one side of the inner surface of the tubular casing prior to the start of the deflection and if the edges of the lowermost surface of that part were in engagement with the opposite side of the inner surface of the tubular casing at the conclusion of that deflection. The ends of the fusible element have configurations which limit axial movement of adjacent portions of the fusible element inwardly of the tubular casing.

3,805,209

MINIATURE ADJUSTABLE ATTENUATOR

Robert M. Keranen, Tustin, Calif., assignor to Telonic Industries, Inc., Laguna Beach, Calif.

Filed Nov. 6, 1972, Ser. No. 303,881
Int. Cl. H01c *15/00*
U.S. Cl. 338—76 **13 Claims**



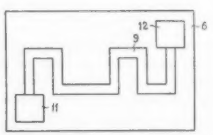
A high frequency attenuator is provided having flat characteristics from direct current to frequencies of the order of 4 GHz and having attenuation adjustable in steps. This is accomplished by securing a plurality of thick film resistive unit pads around a central rotary hub, each pad consisting of a ceramic substrate rectangular in configuration with a fired thick film shunt resistive element supported on the substrate on one face thereof, a pair of fired silver strips also on the face of the substrate contacting the shunt resistive element, a coating of fired silver material completely covering the reverse face of the substrate except for that portion directly opposite the shunt resistive element, and fired silver layers on the edges of the substrates with the inner edges grounded to the central hub. The hub is rotatably mounted in an outer cylindrical housing composed of conductive material. Exposed flexible electrical conductor means surround the resistive units, providing ground connections between the outer conductive edges of the substrates and the outer housing. There is a plurality of fixed terminals on the rotor and a plurality of coaxial transitions are connected between the ends of the silver strip layers and fixed terminals mounted on the rotor. Each fixed rotor terminal is adapted to engage a fixed blade attached to the central conductor of a coaxial connector as the rotor is rotated to select a given attenuator pad.

3,805,210

INTEGRATED CIRCUIT RESISTOR AND A METHOD FOR THE MANUFACTURE THEREOF

Michel Croset, and Noel Nouailles, both of 101, Blvd. Murat, Paris 16 eme, France

Continuation of Ser. No. 94,933, Dec. 3, 1970, abandoned.
This application July 6, 1972, Ser. No. 269,420
Claims priority, application France, Dec. 4, 1969, 69.41888
Int. Cl. H01c *7/00*
U.S. Cl. 338—308 **6 Claims**



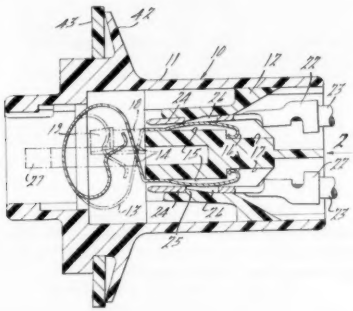
The present invention relates to a method of manufacturing resistors integrated over a substrate made of a dielectric material.

3,805,211

PLASTIC LAMP SOCKET WITH LATCHED INSERT

Marvin W. Moore, Rochester, Mich., assignor to Microdot, Inc., Troy, Mich.

Filed May 9, 1972, Ser. No. 251,734
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 9 Claims



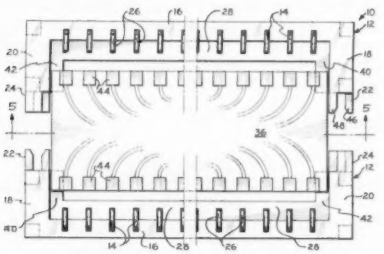
A socket has a housing and a locked insert molded of plastic material and constructed to have insertable terminals engaging contacts in the insert with a ground of unique construction. When a socket has a single or multiple filament bulb mounted therein and supported in a metal panel or receptacle which is grounded, a terminal is in contact therewith when supported in the socket in position to contact the side of the bulb base and form a ground therefor. When the socket falls from the panel or receptacle, the ground is broken and the circuit is open to the bulb. An open grounding strip may be closed when the socket is inserted in a panel or receptacle which deflects a metal strip to produce the completion of a circuit which is broken when the socket falls from or is otherwise removed from the panel or receptacle. The insert for the socket supports the contacts engaged by the bulb and has locking fingers which secure the insert in oriented position within the socket.

3,805,212

TERMINAL HOUSING FOR SUBSTRATE

Dirk Landman, Mechanicsburg, and Ronald Chadwick, York, both of Pa., assignors to Berg Electronic, Inc., New Cumberland, Pa.

Filed May 3, 1971, Ser. No. 139,635
Int. Cl. H05k 1/02
U.S. Cl. 339—17 CF 15 Claims



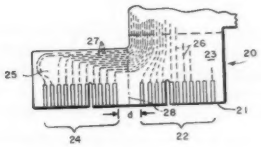
A connector for mounting on a ceramic substrate parallel to a circuit board having a pair of like U-shaped supports each carrying a number of terminals for contact with the substrate. Locking members on the free ends of the support legs secure the supports to one another to form a frame surrounding the substrate and hold the substrate in electrical connection with the terminals. Portions of the terminals extend from the frame to facilitate the formation of electrical connections between the substrate and the circuit board.

3,805,213

FLEXIBLE CIRCUIT CONNECTORS

James E. D. Austin, Southbridge, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed Mar. 22, 1972, Ser. No. 236,867
Int. Cl. H05k 1/00
U.S. Cl. 339—17 F 6 Claims



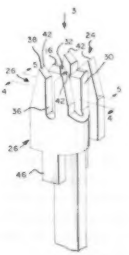
A flexible circuit edge connector in which two sets of connector elements in a flexible circuit member are bonded to opposite sides of an edge of a rigid member so as to be independently connectible to circuit leads on the same side of the flexible circuit member.

3,805,214

RESILIENT ELECTRICAL CONTACT

Henry William Demler, Sr., Lebanon, and Paul Joseph Minchhoff, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 22, 1972, Ser. No. 282,823
Int. Cl. H01r 11/20; H05k 1/02
U.S. Cl. 339—17 8 Claims



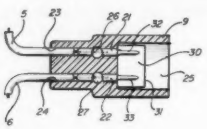
An electrical contact for an electrical wire having a first slotted member for receiving the wire and a pair of supporting members integrally formed with, and disposed upon opposite sides of the slotted member for providing a strain-relief function for the wire, the configuration of the contact being S-shaped in cross-section. A hand tool is provided for inserting the wire within the contact, the tool having pivotable and fixed hand-grip members for actuating a spring biased reciprocable ram and anvil assembly. Operation of the hand-grip members actuates the ram-anvil assembly which inserts the wire within the contact while simultaneously releasing the tool from the contact.

3,805,215

PLUG-IN TYPE CHRISTMAS TREE LIGHT

George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md.

Filed Feb. 20, 1973, Ser. No. 333,536
Int. Cl. H01r *13/20, 9/16*
U.S. Cl. 339—65 **4 Claims**



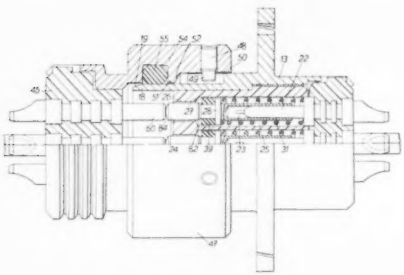
This invention pertains to a lamp, lamp-base and lamp-socket combination particularly adaptable for series wired Christmas tree lighting strings and of an improved plug-in type.

3,805,216

ELECTRICAL CONNECTOR

Claude E. Gaspar, Mondouzil; Christian Adrien, L'Union, and Roman J. Komorowski, Colomiers, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,680
Int. Cl. H01r *13/54*
U.S. Cl. 339—90 R **7 Claims**



An electrical connector of the "butt" contact type having a fixed receptacle and a movable plug. The receptacle comprises a shell which receives two insulators. The insulators house a set of contact elements comprising a fixed piece and a movable piece. The fixed piece is made up of a solder termination and a pin which cooperates with the slotted socket of the movable piece. The latter is subjected to the action of a spring. The plug of the connector includes an insulator which holds another set of fixed contact elements. Locking of the plug and receptacle is is achieved by bayonets housed in the plug.

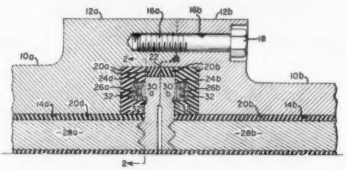
3,805,217

CONNECTION BAR COUPLING

Gerd E. Krulls, Delanson, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,492
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 R **5 Claims**

A coupling for a pair of hollow shafts each of which includes at least one conductor bar to also be correspondingly connected one to the other. The shaft members and the conductor bars respectively include coupling flanges wherein Belleville



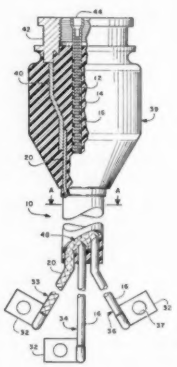
springs are utilized to effect electrical connection of the flanges on the conductor bars.

3,805,218

BATTERY CABLE ASSEMBLY

George Voida, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 4, 1973, Ser. No. 347,758
Int. Cl. H01r *11/06*
U.S. Cl. 339—148 **4 Claims**



A battery cable for use in severe electrochemical environments comprising a plurality of copper conductors clad with nickel and coated with insulation material, a nickel braid encompassing the insulated conductors, an encapsulant generally permeating and surrounding the nickel braid and the insulated conductors, nickel lugs welded to the conductors at one of the ends of the cable, and a molded connector portion at the other end of the cable. The nickel braid is twisted at its end and is welded to a lug to form a ground connector.

3,805,219

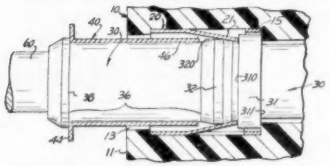
CONTACT REMOVAL BUSHING FOR ELECTRICAL CONNECTOR

Edward J. Bright, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1973, Ser. No. 336,306
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **16 Claims**

An electrical connector having a built-in tool for removing electrical contacts from the connector for maintenance and/or repair. Each of the contacts of the connector includes a movable bushing mounted thereon which is operable to release the contact from the connector insert. The configuration of the

contact and movable bushing is such that the movable bushing may be expanded larger than the opening at the end of the bore through which the bushing passed to gain entry to the retention portion of the connector insert.



3,805,220
ELECTRICAL CONTACT PIN RECEPTACLE ELEMENT

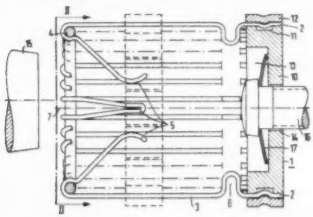
Erich Silbermann, Bubenreuth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 11, 1973, Ser. No. 350,046

Claims priority, application Germany, Apr. 20, 1972, 2219351

Int. Cl. H01r *13/12*

U.S. Cl. 339—258 R **8 Claims**



An electrical contact pin receptacle element in which a plurality of resilient, electrically conductive springs are disposed in an annular arrangement forming a cylindrical structure. One of the ends of each spring is secured to an annular mounting plate, while the other ends are disposed around an annular mounting ring, and extend radially inwardly towards the center of the mounting ring and the cylindrical structure and longitudinally towards the mounting plate. Insertion of a contact pin radially offset from the longitudinal axis of the receptacle element causes the mounting ring to shift with respect thereto so that the inwardly extending ends of the springs receive the contact pin and engage it with equal spring tension.

3,805,221
INSPECTABLE-CORROSION RESISTANT ELECTRICAL CONNECTOR

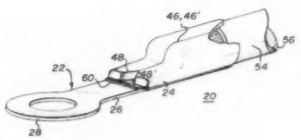
Lai Che Kuo, Fanwood, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 25, 1972, Ser. No. 300,760

Int. Cl. H01n *11/08*

U.S. Cl. 339—276 R **12 Claims**

An electrical connection employing connector means comprising a crimpable wire receiving portion having a selectively beveled end terminating in a sharp inner edge for severing a portion of a conductor end which may extend beyond the end of the wire receiving portion from the remainder of the conductor portion crimped therewithin, and engaging the adjacent connector means surface to provide a seal thereat, thus avoiding a bimetallic couple where dissimilar metals are present, and protecting the enclosed portion of the conductor from environmental and electrochemical attack at the severed end. The wire receiving portion may be selectively notched to provide inspection means for observing the extent of insertion of the conductor portion therewithin, and may be formed in either a generally U-shaped or cylindrically shaped configuration, further comprising grip means adjacent the entrance end to provide additional sealing and support thereat.



3,805,222
METHOD FOR THE PRODUCTION OF HIGHLY-RESOLVED SONAR PICTURES

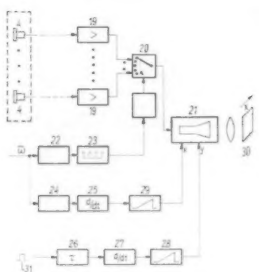
Dietlind Pekau, Krailling, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 7, 1971, Ser. No. 148,268

Claims priority, application Germany, Apr. 27, 1970, 2020566

Int. Cl. G01s *9/66*

U.S. Cl. 340—3 R **12 Claims**



A method for producing highly-resolved sonar pictures by sending out coherent ultrasonic waves and receiving the returning echo signals on a ship which is preferably moving, with the aid of sound transducers which are arranged in a line parallel to the azimuth direction, wherein both phase information and the amplitude information of the echo signals which are received by the sound transducers are recorded through the utilization of a reference signal as a function of the reception time on parallel straight lines which are inclined with regard to the target-distance coordinate axis in accordance with the speed of movement of the ship.

3,805,223
ULTRASONIC DETECTOR

Gert Nilsson, and Mats Oberg, both of Malmo, Sweden, assignors to AB Farad, Hagersten, Sweden

Filed Nov. 10, 1972, Ser. No. 305,579

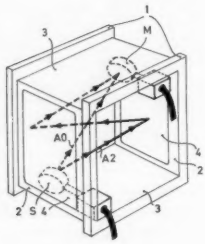
Claims priority, application Sweden, Nov. 12, 1971, 14496/71

Int. Cl. G01s *9/70*

U.S. Cl. 340—3 R **2 Claims**

A system for detecting an object in a body of water bounded by a pair of oppositely spaced walls utilizes ultrasonic sound

pulses which are transmitted between the two walls to a receiver in a path reflected by the walls; a delay circuit is employed to ensure that the entire space between the walls will be covered by the reflected pulses.



3,805,224

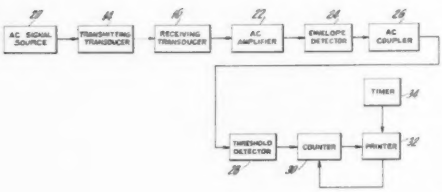
METHOD AND APPARATUS FOR MONITORING BIOLOGICAL ACTIVITY

Robert C. Wenz, Hanover, Mass., assignor to Alpine Geophysical Associates, Inc., Norwood, N.J.

Filed Nov. 24, 1972, Ser. No. 309,181

Int. Cl. G01s *9/66*

U.S. Cl. 340—3 R **27 Claims**



The physical activity of biological specimens in an environmental medium is monitored by setting up a standing pattern of ultrasonic acoustic waves in the environmental medium. As the biological specimens move about in the environment, they disturb the standing wave pattern. These distrubances are monitored to produce output indications of the degree of biological activity. The quality of an environmental medium is indicated by monitoring the activity of biological specimens in a controlled sample of that medium.

3,805,225

ACOUSTIC HOLOGRAPHY SYSTEM

Jean Bossaert; Jean Delorme, and Joel Ernvein, all of 173, Bl. Haussmann, Paris 8 eme, France

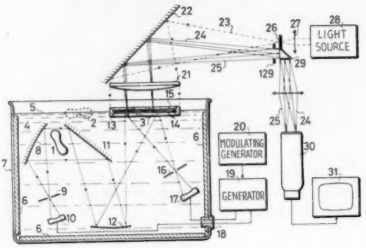
Filed Aug. 10, 1972, Ser. No. 279,727

Claims priority, application France, Aug. 27, 1971, 71.31185

Int. Cl. G01s *9/66*

U.S. Cl. 340—5 H **4 Claims**

Acoustic holography system for imaging an object immersed in an ultrasonic tank, by means of an acoustic hologram of said object. The acoustic holography system in accordance with the invention comprises ultrasonic means for constructing the hologram; said ultrasonic means comprise an ultrasonic generator modulated at low frequency for reducing speckle in the reconstructed image. The invention is applicable to ultrasonic imaging for use in the fields of medicine and industry.



3,805,226

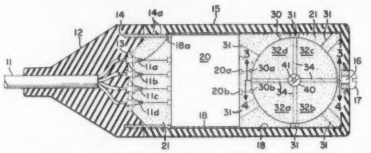
OMNIDIRECTIONAL HIGH SENSITIVITY HYDROPHONE

Jack W. Holloway, Chula Vista, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1971, Ser. No. 115,427

Int. Cl. H04b *13/00*

U.S. Cl. 340—10 **7 Claims**



A spherical-shell transducer, formed of two hemispherical shells bonded together, has inner and outer metal films radially aligned in quadrature to define eight discrete sections sensitive to impinging, acoustic energy to generate representative signals. Connecting the sections in series and encasing them in a viscous, dielectric substance, contained in a shielded, flexible boot, provides a broadband, highly sensitive hydrophone. Filling the spherical shell with the viscous dielectric and including a vent allowing a fluid communication between its interior and exterior render the hydrophone insensitive to ambient pressure variations. A preamplifier, optionally included, ensures the transfer of the representative signals to remote circuitry via an interconnected coaxial cable.

3,805,227

ELECTRONIC TRACKING LOCATING SYSTEM USING MULTIPLE FREQUENCY, MODULATED, AND TIME DELAYED ULTRASONIC SIGNALS

Robert W. Lester, Manhasset, N.Y., assignor to RCDS Enterprises, Inc., New York, N.Y.

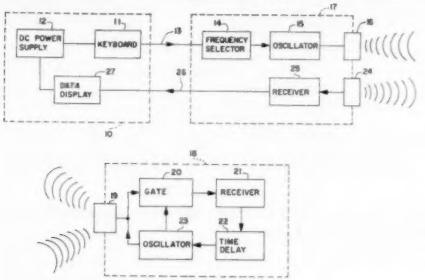
Filed Oct. 3, 1972, Ser. No. 294,761

Int. Cl. G08b *5/00;* **G01s** *3/80*

U.S. Cl. 340—16 R **10 Claims**

An electronic tracking and locating system for automatically locating at least one of a select group of individuals or objects disposed within a selected area of surveillance is disclosed. The system comprises an ultrasonic identification signal generator and transmitter for generating and transmitting the identification signal at one of a plurality of preselected frequencies throughout the selected area of surveillance, the frequency of the signal being unique with

respect to the individual or object to be located. Transceivers are disposed remotely from the identification signal generator and transmitter, and are carried by each individual or object within the select group for receiving the identification signal. The transceivers transmit an output signal at a preselected frequency in response to an identification signal having a frequency corresponding to the frequency designated to the person or object and transceiver.



Receivers selectively disposed throughout the area of surveillance receive the transmitted output signal from the transceiving means, and transmit a location identification signal which identifies the location within the area of surveillance of the output signal receiver. A console is disposed at a central location within the area of surveillance for receiving the location identification signal and indicating the location of the person or object located.

3,805,228

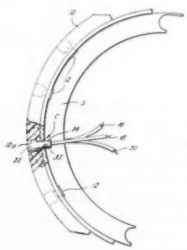
VEHICLE BRAKE LINING WEAR INDICATION APPARATUS

Allyn W. Peeples, 405 Robert Lee, Houston, Tex.

Filed Apr. 20, 1972, Ser. No. 245,990

Int. Cl. G08b *21/00*

U.S. Cl. 340—52 A **6 Claims**



An apparatus for indicating the wear of vehicle brakes by sensing the amount of wear of the vehicle brake lining at each wheel, in three stages or states of wear, and giving an indication when the brake lining of a wheel is worn to a more severe or dangerous state than the other brake linings.

3,805,229

SELF-PULSING TRANSMITTER FOR VEHICLE TIRE PRESSURE INDICATION SYSTEM

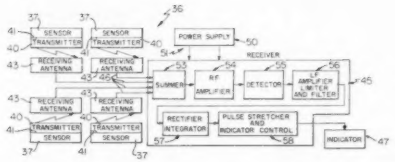
John C. Murphy, Columbus, Ohio, assignor to Avco Corporation, Richmond, Ind.

Filed Sept. 15, 1972, Ser. No. 289,698

Int. Cl. B60c *23/04*

U.S. Cl. 340—58 **6 Claims**

A self-pulsed oscillator or transmitter and a pneumatic tire low pressure monitoring and warning system using same is provided wherein the transmitter comprises a transistor having base, emitter, and collector electrodes with the electrodes being operatively connected to a DC power source. The transmitter has oscillating means connected between the base electrode and the collector electrode establishing the frequency of the oscillator and employs a simple and inexpensive device to provide a self-pulsing action.



3,805,230

LIQUID COOLANT LEVEL DROP ALARMING SYSTEM

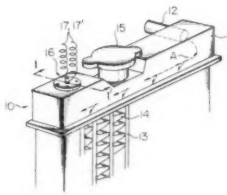
Hiroshi Sakasegawa; Mitsuru Iizuka, both of Yokohama, and Takenori Senju, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 23, 1972, Ser. No. 256,098

Claims priority, application Japan, Nov. 2, 1971, 46-101549; Dec. 17, 1971, 46-119134

Int. Cl. G08b *21/00*

U.S. Cl. 340—59 **10 Claims**



A liquid coolant level drop alarming system which comprises a level drop detector mounted on the upper tank of the radiator of a motor vehicle and having a conductivity varied upon a level drop of the liquid coolant till a preselected level, and indicating means for indicating the variation of the conductivity of the level drop detector. Either a thermistor or switch means including a magnetic reed switch and a magnetic float means surrounding the magnetic reed switch can be utilized for the system.

3,805,231

SECURITY LICENSE PLATE FOR VEHICLES

Michael Santoli, 6915 Reynolds Rd., Mentor, Ohio

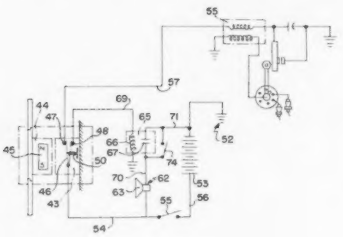
Filed Aug. 26, 1971, Ser. No. 175,344

Int. Cl. B60r *25/04*

U.S. Cl. 340—63 **7 Claims**

A security license plate for use with vehicles has a plate-like body of a predetermined configuration. The body includes a main section and a fragmentary section which together define the predetermined configuration for the body. The main section is arranged for mounting on the vehicle and the fragmentary section is detachable from the main section such that the configuration of the body is recognizably changed to visually indicate an unauthorized use of the vehicle, and wherein the vehicle is of the type having an ignition system, and a

switching means is operably connected in the ignition system including an actuating assembly mounted on the fragmentary section to disenable energization of the ignition system upon removal of the fragmentary section from the main section.



3,805,232

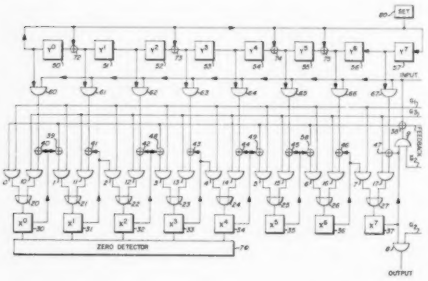
ENCODER/DECODER FOR CODE WORDS OF VARIABLE LENGTH

Larry Van Allen, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 24, 1972, Ser. No. 219,998

Int. Cl. G06f *11/12*

U.S. Cl. 340—146.1 AL **4 Claims**



An encoder/decoder is described in which a conventional feedback shift register for encoding cyclic code words is augmented by an auxiliary feedback shift register. The auxiliary register is interconnected in such a manner that it provides appropriate feedback paths for enabling error correction for a code word of any shortened length.

3,805,233

ERROR CHECKING METHOD AND APPARATUS FOR GROUP OF CONTROL LOGIC UNITS

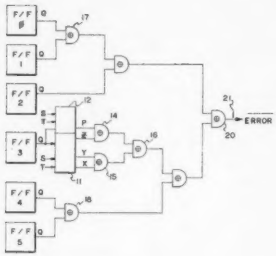
Howard L. Steadman, Menlo Park, Calif., assignor to Tymshare, Inc., Cupertino, Calif.

Filed June 28, 1972, Ser. No. 267,040

Int. Cl. G06f *11/10*

U.S. Cl. 340—146.1 AG **1 Claim**

A method and apparatus for error checking control logic, for example, in a sequencer loop where only one binary flip-flop unit of the sequencer may be true at any one time and thus the loop has a constant parity. All of the bistable units are coupled to a parity checking unit and the combined parity is checked for the constant parity.



3,805,234

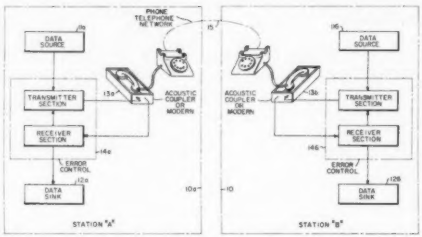
DIGITAL DATA TRANSMISSION SYSTEM

Harvey M. Masters, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,345

Int. Cl. H04l *1/14*; G08c *25/02*

U.S. Cl. 340—146.1 BA **11 Claims**



Apparatus for transmitting digital data and for correcting errors which occur in the transmission of the data while maintaining high transmission efficiency is disclosed. Digital data words are sequentially transmitted with each of the data words containing a field code related to the sequence in which the data words are extracted from the data source. A receiver detects and retransmits each of the digital data words including the field codes. The retransmitted data words are detected by the transmitter and compared to the words as originally transmitted. If an error is detected, the transmission sequence is repeated beginning with the word found to contain an error. This unique arrangement of the field codes permits the receiver to determine which words have been verified as correct by the transmitter. Transmission is not interrupted. Supervisory signals are not exchanged between transmitter and receiver.

3,805,235

EQUALIZATION MEANS FOR MULTI-CHANNEL REDUNDANT CONTROL SYSTEM

Jimmie J. L. Foster, and Elmer J. Schultz, both of Marion, Iowa, assignors to Collins Radio Company, Dallas, Tex.

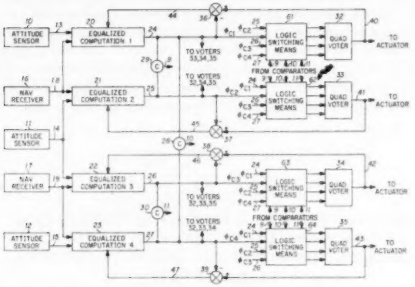
Filed Dec. 26, 1972, Ser. No. 317,897

Int. Cl. G06f *11/00*

U.S. Cl. 340—146.1 BE **5 Claims**

An equalization means for a multi-channel redundant command signal computation control system where each channel

output is applied to an associated one of a plurality of output signal voting means to which all other channel outputs are also



applied for logically best signal selection. Each computation is equalized on the basis of the discrepancy between its output and that of the associated voting means.

3,805,236

DECODING DEVICE OF THE WEIGHTING AND FEEDBACK TYPE

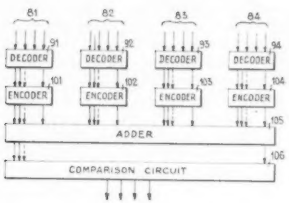
Gerard Battail, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 4, 1973, Ser. No. 321,015

Claims priority, application France, Jan. 7, 1972, 72.00497; Dec. 8, 1972, 72.43744

Int. Cl. H03k *13/00*; **H04l** *1/10*

U.S. Cl. 340—146.1 AQ **8 Claims**



A plurality of complex replicas, or estimates, of each transmitted information bit, based on the parity-check equations, are formed in addition to the simple replica which the corresponding received information bit constitutes. To each replica is associated a likelihood magnitude of the form $\log_m(1-P)P$ where P is the probability of the replica being erroneous.

The decision is made by an algebraic adder forming the sum of the likelihoods of different estimates of the information bit, those likelihoods being associated with a plus or minus sign according to whether the binary value of the replica is 0 or 1.

The sign of the sum gives the decoded value, and the absolute value of the sum, the likelihood of the decoded value.

3,805,237

TECHNIQUE FOR THE CONVERSION TO DIGITAL FORM OF INTERSPERSED SYMBOLIC AND GRAPHIC DATA

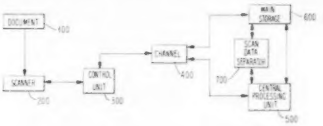
Richard O. Cobb, and Albert C. Moore, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,113

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 H **4 Claims**

A system for computerizing changes to engineering drawings by separating graphical and textual information in a digital representation of a drawing so that desired changes can be made to the digital representation. Separation is accomplished by scanning the document and analyzing it element by



element until all objects have been separated one from another. Special purpose circuitry is provided to test for connectivity between one state bits in a single row and adjacent one state bits in the directly neighboring row.

3,805,238

METHOD FOR IDENTIFYING INDIVIDUALS USING SELECTED CHARACTERISTIC BODY CURVES

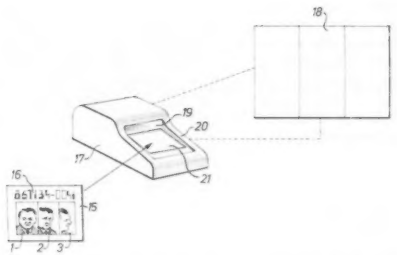
Rolf Eric Rothfjell, Luntmakargatan 52, Stockholm, Sweden (S10365)

Filed May 9, 1972, Ser. No. 251,807

Claims priority, application Sweden, Nov. 4, 1971, 14109/71

Int. Cl. G06k *9/08*

U.S. Cl. 340—146.3 E **18 Claims**



A method for identifying individuals using selected characteristic body curves which are usually substantially constant characteristic facial curves derived from one or more images of the individual being identified. The curves may be used for visual comparison with an image of the individual in an identification card format, or the curves may be stored in data processing apparatus and reproduced for comparison, or automatically compared, with an image of the individual presented for use in conjunction with the data processing apparatus.

3,805,239

PATTERN TREATING APPARATUS

Sadakazu Watanabe, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki, Japan

Filed Jan. 24, 1973, Ser. No. 326,527

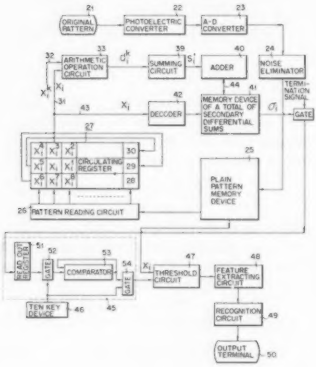
Claims priority, application Japan, Jan. 24, 1972, 47-8257

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 MA **10 Claims**

A pattern treating apparatus comprising a memory device for storing in the matrix form electrical signals corresponding to the gray levels of the respective picture elements of a pattern, the gray level being divided into a plurality of unit steps between white and black levels of each element; a device for successively reading out of said memory device electrical signals representing a matrix pattern such as a 3×3 matrix pattern consisting of nine picture elements in total, eight of which are arranged around the central one, and determining the differenes between the gray level of the central picture element and those of the eight surrounding picture elements to

obtain a sum of these differences. A device is provided for adding up all differential sums of various matrices containing a given picture element as the central one as calculated out by said summing device, carrying out the similar addition of all differential sums of various matrices containing another picture element as the central one and, after completing such addition with respect to numerous matrices in which different picture elements constitute the central one, detecting the gray level of that picture element taken as the central one which gives a maximum value from among the totals of differential sums thus computed. A device is further provided for reading out of said memory device data on a prescribed gray level higher or lower than the gray level of maximum value used as a threshold value.



3,805,240

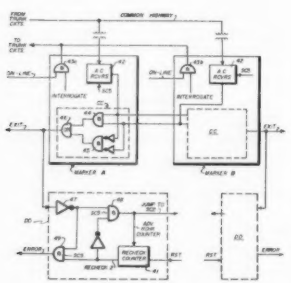
METHOD AND ARRANGEMENT FOR ENTERING NON-SYNCHRONOUS INFORMATION INTO TWO MACHINES WHICH RUN SYNCHRONOUSLY

Gerald H. Fleischfresser, Chicago, Ill., assignor to GTE Automatic Laboratories Incorporated, Northlake, Ill.

Filed Mar. 28, 1973, Ser. No. 345,626

Int. Cl. H04q *3/42*

U.S. Cl. 340—147 SY **6 Claims**



In the centralized automatic message accounting system of the invention, a marker scans the trunk circuits for calls for service, and call for service requests are returned from the trunk circuits to the marker. A pair of markers are provided and, while only one marker is on-line at a time, the other being off-line or on standby, the call for service information is returned to both markers. With such an arrangement, both markers must receive the same information. There is always some difference in sensitivity of the detectors or receivers in the markers, and the markers can get out of sync one or more times during a day. With the arrangement of the invention, the information is compared and re-interrogated a predetermined number of times, in an attempt to maintain the markers in sync. If after re-interrogation the markers still disagree, the on-line marker is forced to continue to process the call on the basis of its own data, and the off-line marker is reset to idle.

3,805,241

CIRCUIT ARRANGEMENT FOR THE UNDISTURBED TRANSMISSION AND STORAGE OF ELECTRICAL INFORMATION SIGNALS AT A REMOTE CONTROL INSTALLATION

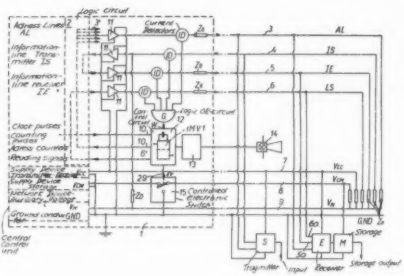
Jakob Iseli, Gbenstorf; Georges Tenchio, Staufen, both of Switzerland, and Dieter Schulz, Hannover, Germany, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed May 3, 1973, Ser. No. 356,746

Claims priority, application Switzerland, May 5, 1972, 6703/72

Int. Cl. H04q *9/00*; **H04l** *25/02*

U.S. Cl. 340—147 R **13 Claims**



A circuit arrangement for the undisturbed transmission and storage of electrical information signals at a remote control installation containing addressed transmitter and receiver means possessing addressed remanent intermediate storage means and which by means of conductors are connected with a central control unit having a logic circuit for the delivery of address signals and for the further transmission of the information signals received by the transmitters to the remanent intermediate storages of the receivers. A current detector is connected with each of the signal-carrying conductors of the remote control installation, the conductors being terminated at their ends by their characteristic impedance. A boundary value indication as well as an OR- logical coupling is provided for the output signals of the current detectors in order to obtain a pulse-shaped disturbance signal as soon as in only one of the aforementioned conductors the current intensity passes a lower or upper boundary value. A controllable electronic switch is connected in circuit with the supply conductor for the remanent intermediate storage of the receiver and there is provided for the electronic switch as for the logic circuit of the central control unit a control circuit influenced by the disturbance signals and by means of which control circuit and through the action of a disturbance signal the supply conductor is temporarily short-circuited by the electronic switch and via the logic circuit at the central control unit there is interrupted the delivery of the address signals and the further transmission of the information signals.

3,805,242

MULTIPLEX DATA TRANSMISSION SYSTEM FOR PROCESS CONTROLLER

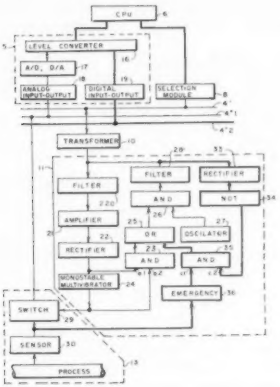
Kuniaki Matsumoto, and Shinichi Yamada, both of Hitachi, Japan, assignors to Hitachi Ltd., Chiyoda-ku, Tokyo, Japan

Filed Dec. 10, 1971, Ser. No. 206,799

Claims priority, application Japan, Dec. 11, 1970, 45-109499

Int. Cl. H04q *11/00*

U.S. Cl. 340—163 R **14 Claims**



A multiplex data transmission system is provided between a process controlling computer and a plurality of sensor signal transmitting end stations and control signal receiving end stations in pairs throughout the process. Different address frequencies are assigned to each of the end stations, so that the computer may call one of the sensor signal transmitting end stations by sending its address frequency as a signal over a common address line, in response to which the sensor signal transmitting end station will transmit signals, either analogue or digital, back to the computer together with its self-generated identification assigned address frequency, with the sensor signal corresponding to a characteristic of the process. The computer will process the received sensor signal and send a control signal, either analogue or digital, to the associated control signal receiving end station of the pair over a common line by simultaneously sending its assigned address frequency. All of the end stations will be addressed sequentially in order during normal operation, but if one of the sensors produces a signal beyond a normal range to denote an emergency, the emergency sensor signal will be transmitted along with its assigned address frequency to the computer as soon as the system is instantaneously free of address frequencies so that the emergency sensor signal may be squeezed in out of order. The system may operate as either a sensor signal data bus system or highway system, with the data being sent by either space division or time division, respectively.

3,805,243

APPARATUS AND METHOD FOR DETERMINING PARTIAL MEMORY CHIP CATEGORIES

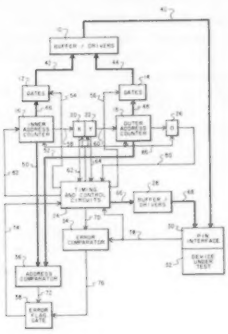
Conrad J. Boisvert, Jr., Wappingers Falls, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,450

Int. Cl. G06f *11/04*

U.S. Cl. 340—172.5 **6 Claims**

A machine-practiced method for determining quarter-partial memory chip categories. In the case of 1024-cell chips having ten address bits, there are 180 quarter-partial memory chip categories; permanently addressing any two of the 10 address lines with 1's or 0's, or combinations thereof, produces an effective 256-cell chip, any cell of which can be selected depending upon the address bits extended to the other eight address lines. The method allows a rapid determination of the applicable quarter-partial chip categories after all of the cells



on the chip are first tested and the bad cells are identified. One way to identify the bad cells is to use a test sequence which has the minimum length required to test for all dynamic failure modes of interest. Apparatus is also disclosed for testing the cells at a slower rate, but with a minimum of tester complexity.

3,805,244

COMPUTER PROCESS-CONTROL SYSTEM FOR CARRYING OUT SPINNING OPERATION

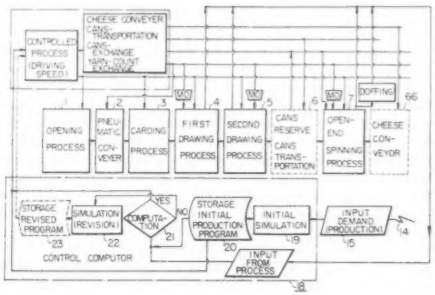
Takuzo Tooka, Aichi-ken, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Japan

Filed May 25, 1971, Ser. No. 146,659

Claims priority, application Japan, May 26, 1970, 45-44703; May 26, 1970, 45-44704; May 26, 1970, 45-44705; May 26, 1970, 45-44706

Int. Cl. B65h *59/38*; **G06f** *15/46*

U.S. Cl. 340—172.5 **2 Claims**



A computer process-control system for carrying out a spinning operation where optimum parameters are computed by a computer in accordance with a desired accumulative production amount. The spinning operation is carried out in accordance with the parameters and actual data generated in each process is applied to the control computer. The control computer compares the difference between the actual accumulative amount of production with a desired one. When the difference between actual amounts of production and a desired amount of production falls outside of an allowable

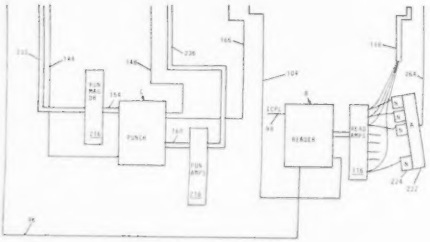
range, the parameters as well as the driving condition of the process are automatically revised by the control computer.

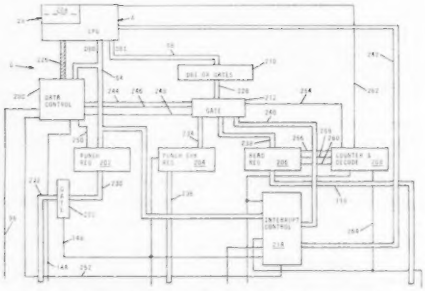
3,805,245

I/O DEVICE ATTACHMENT FOR A COMPUTER

Everett G. Brooks; Nyles N. Heise; David O. Lewis; Glenn D. Pooler, all of Rochester, Minn., and Dean O. Zimmerman, Dunwoody, Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 11, 1972, Ser. No. 242,962
Int. Cl. G06f *3/08*
U.S. Cl. 340—172.5 **10 Claims**





An attachment for attaching I/O devices to the central processing unit of a computer including a minimized amount of hardware and particularly including registers for holding data that is being transferred from the central processing unit to an I/O device or vice versa. The attachment preferably also includes interrupt control logic for obviating the necessity for continuous polling of the I/O devices. Other necessary control functions for servicing the I/O devices, such as for translating the customer's program I/O commands, initializing interrupt levels, keeping track of the progress of processing by the I/O devices and sensing when an I/O operation is completed are performed by an interpretive mode program contained in a dedicated portion of the memory of the central processing unit.

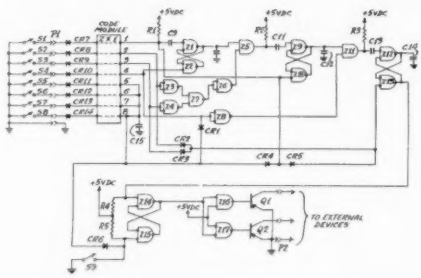
3,805,246

CODED ACCESS DEVICE

Stephen L. Colucci; Michael T. Elliott, both of South Bend; Ronald L. Erichsen, Mishiwaka; David L. Sypniewski, and Frank E. Vopat, both of South Bend, all of Ind., assignors to University of Notra Dame du Lac, Notra Dame, Ind.

Filed May 8, 1972, Ser. No. 250,970
Int. Cl. G05b *1/00;* **H04g** *3/02*
U.S. Cl. 340—172.5 **11 Claims**

An electrical lock mechanism includes a series of sequentially connected memory storage elements, such as flip-flops, terminating in one or more electrical and/or electromechanical devices that control an external function. Entries into the circuit are made from a plurality of remote switches or switching devices connected to interlocks or logic elements, such as nand gates, that are connected between adjacent memory storage elements. Entry to the circuit through the interlocks in a single predetermined sequence allows for the setting of successive memory elements; the memory elements serve to nullify any progress through the sequence if an incorrect entry is made. An exchangeable code module between



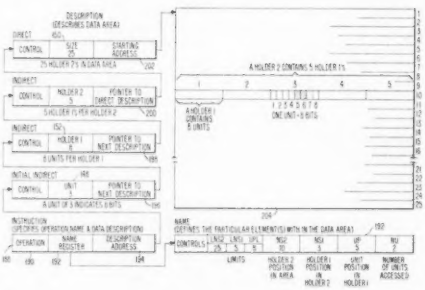
the switches and the circuit allows for the changing of switch combinations. The predetermined code may require the correct selection of single switches in a particular sequence, as well as simultaneous entries from a plurality of switches. Several circuits may be connected in series, such that a plurality of individuals having knowledge of their respective portion of the sequence are required to effect the proper combinations. A simple circuit allows for about 50,000 possible combinations, and several million possible combinations may be easily attained.

3,805,247

DESCRIPTION DRIVEN MICROPROGRAMMABLE MULTIPROCESSOR SYSTEM

Sandra Zucker, Malvern; Ulbe Faber, Honeybrook, and Robert L. Davis, Phoenixville, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 16, 1972, Ser. No. 253,834
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **7 Claims**



In a multiprocessor system, a source of description is provided in a unique work area assigned to each user program or process that references data and program stored in memory. Each description includes a first field defining the structure and format of the data, a second field specifying the location of the objects, the size of the object and any limits imposed, and a third field for controlling access and governing the data

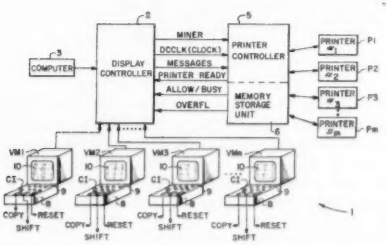
usage. Also included in each description are operating system flags which cause an operating system function to be executed at the microprogram level. Individual instructions of an instruction set for the multiprocessing system are executed with descriptions which interpret the instruction, executes the indicated instruction operation as defined by the fields of description, and may call for the next instruction.

3,805,248

DATA PROCESSING PRINTOUT SYSTEM

Floyd D. Morris, Pennsauken, and Barry S. Rich, Cherry Hill, both of N.J., assignors to Ultronic Systems Corp., Moorestown, N.J.

Filed July 21, 1972, Ser. No. 273,934
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **24 Claims**



Data processing printout system for providing hard copy of information originating from a computer or from video display terminals. The data processing printout system includes a printer controller having a storage unit for storing information, in the form of multi-character messages, originating from the computer or from the video display terminals. Messages stored in the storage unit are continuously extracted therefrom and applied selectively to printers connected to the printer controller for providing the desired hard copy. The storage unit is "data dynamic" in that as characters in a message are printed by a printer they are removed from the storage unit, thereby causing a growing area of empty spaces in the storage unit.

The printer controller of the invention also includes: a space availability arrangement for controlling the storage of messages in empty spaces in the storage unit; a new-line processing arrangement for processing new-line characters included in messages originating from the computer or from the video display terminals; an overflow message erase arrangement for erasing from the storage unit any stored characters of a message originating from the computer or from a video display terminal where the message is deemed to have a length, due to error, in excess of a maximum permissible length; and message erase arrangements for erasing from the storage unit any stored characters of a message originating from the computer, or a segment of a multi-segment message, where the message or segment is deemed to be in error (e.g., incorrect parity).

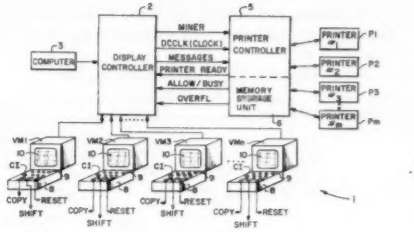
3,805,249

FORMAT HARD COPY DISPLAY APPARATUS FOR A DATA PROCESSING PRINTOUT SYSTEM

Barry S. Rich, Cherry Hill, N.J., assignor to Ultronic Systems Corp., Moorestown, N.J.

Filed July 21, 1972, Ser. No. 274,000
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **15 Claims**

Format hard copy apparatus for providing a printed hard copy of formatted information displayed on the display surface of a video display terminal and comprising both fixed field and variable field information. In one mode of operation of the format hard copy apparatus of the invention, the format hard copy apparatus is capable of providing a printed hard copy of both fixed field and variable field information displayed on the display surface of a video display terminal. In a second mode of operation, the format hard copy apparatus is



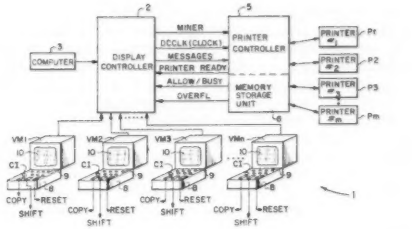
capable of providing a printed hard copy display of only the variable field information, this information being arranged in the printed hard copy in a left-justified (columnar) format. The format hard copy apparatus of the invention is also capable of excluding in a final printed hard copy any displayed variable field information not desired to be printed out.

3,805,250

PARTIAL MESSAGE ERASE APPARATUS FOR A DATA PROCESSING PRINTOUT SYSTEM

Barry S. Rich, Cherry Hill, N.J., assignor to Ultronic Systems Corp., Moorestown, N.J.

Filed July 21, 1972, Ser. No. 274,104
Int. Cl. G06f *3/14*, *11/10*
U.S. Cl. 340—172.5 **4 Claims**



A data processing printout system for providing hard copy of information originating from a computer or from video display terminals. The data processing printout system includes a printer controller having a memory storage unit for storing information, in the form of multi-character messages, originating from the computer or from the video display terminals. Messages stored in the memory storage unit are continuously extracted therefrom and applied to printers connected to the printer controller for providing the desired hard copy. As characters are extracted from the memory storage unit and applied to the printers, empty spaces are established in the memory storage unit for receiving and storing new messages to be printed by the printers. The printer controller also includes, in accordance with the invention, a partial message erase arrangement for erasing from the memory storage unit a segment of a multi-segmented message originating from the computer and deemed to be in error, for example, incorrect

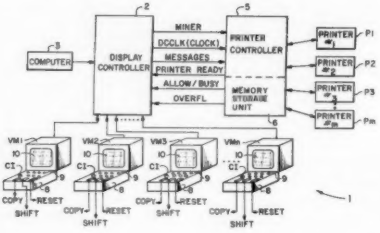
parity. In this case, all other segments of the message and all other messages originating from the computer or from the video display terminals are left undisturbed in the memory storage unit.

3,805,251

DATA PROCESSING APPARATUS FOR A PRINTING SYSTEM

Floyd D. Morris, Pennsauken, and Barry S. Rich, Cherry Hill, both of N.J., assignors to Ultronic Systems Corp., Morrestown, N.J.

Filed July 21, 1972, Ser. No. 274,107
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **8 Claims**



Data processing printout system for providing hard copy of information originating from a computer or from video display terminals. The data processing printout system includes a printer controller having a memory storage unit for storing messages originating from the computer or from the video display terminals. Messages stored in the memory storage unit are continuously extracted therefrom and applied to printers connected to the printer controller for providing the desired hard copy. There are no special allocated or assigned spaces in the memory storage unit for messages originating from the computer or from the video display terminals. It is possible for several messages to be stored in the memory storage unit at any given time to be printed out by a single printer. In this case, the messages are printed out by the printer in the same sequence in which the messages were entered and stored in the memory storage unit, that is, in chronological sequence, even though the messages may not be stored in contiguous areas of the memory storage unit and may possibly be interspersed with messages intended for other printers.

Each of the video display terminals is assigned to a particular one of the printers for providing the hard copy of messages originating from the video display terminal. The computer may cause messages to be printed by any one of the printers. The printers may be of different types, for example, of the thermal or impact type and of the character or line printer type.

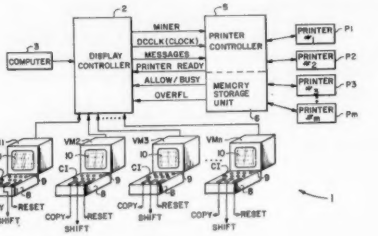
3,805,252

FULL MESSAGE ERASE APPARATUS FOR A DATA PROCESSING PRINTOUT SYSTEM

Floyd D. Morris, Pennsauken, and Barry S. Rich, Cherry Hill, both of N.J., assignors to Ultronic Systems Corp., Moorestown, N.J.

Filed July 21, 1972, Ser. No. 274,108
Int. Cl. G06f *3/14, 11/10*
U.S. Cl. 340—172.5 **13 Claims**

A data processing printout system for providing hard copy of information originating from a computer or from video display terminals. The data processing printout system includes a printer controller having a memory storage unit for storing information, in the form of multi-character messages, originating from the computer or from the video display terminals. Messages stored in the memory storage unit are continuously extracted therefrom and applied to printers connected to the printer controller for providing the desired hard copy. As characters are extracted from the memory storage unit and applied to the printers, empty spaces are established in the memory storage unit for receiving and storing new messages to be printed by the printers. The printer controller also includes, in accordance with the invention, a full message erase arrangement for erasing from the memory storage unit the



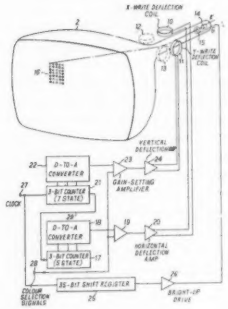
stored characters of a message originating from the computer or from one of the video display terminals and having a length, due to error in excess of the available space for the message in the memory storage unit, and for erasing from the memory storage unit multisegmented messages originating from the computer and having a segment deemed to be in error, for example, incorrect parity. All other messages are left undisturbed in the memory storage unit.

3,805,253

APPARATUS FOR VISUAL DISPLAY OF ALPHA-NUMERIC DATA IN COLOURS

Roy McLanaghan, Aylesbury, England, assignor to Redifon Limited, London, England

Filed Aug. 11, 1972, Ser. No. 279,793
Claims priority, application Great Britain, Sept. 16, 1971, 38357/71
Int. Cl. G06f *3/14;* **G06k** *15/18*
U.S. Cl. 340—172.5 **4 Claims**



Apparatus for the visual display of alpha-numerical data in a plurality of colours using a multiple-colour cathode ray tube of the beam-penetration type. The apparatus is used particularly for the real-time display of up-dated data during a ground-based flight simulator exercise. Data from the associated flight simulator digital-computer is selected by an address generator and stored in an auxiliary buffer memory store. Data comprises character data and control data. Character data defines specific characters by selective dot bright-up during dot-matrix scan. Control data determines position, line and colour of the associated character. Data

selection may be automatic or manual. Data colour display reserves Red for abnormal data.

3,805,254

DEVICE FOR WRITING SUBWORDS INTO A STORE IN AN INVERTED OR NON-INVERTED FORM

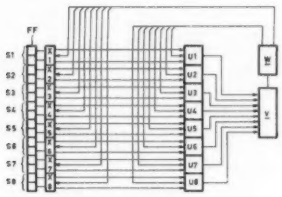
Cornelis Christianus Maria Schuur, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 285,018

Claims priority, application Netherlands, Sept. 4, 1971, 7112207

Int. Cl. G11c *7/00*

U.S. Cl. 340—172.5 **7 Claims**



Apparatus for writing subwords into a store. A word to be written into a matrix store is divided into subwords. If the number of zeros in the word deviates too much from 50 percent, the subwords can be inverted until the difference is sufficiently small. The process is less time-consuming as groups of subwords are treated simultaneously. As a result, the impedance of the word lines varies little during writing and the interference between the bits of the word is also reduced.

3,805,255

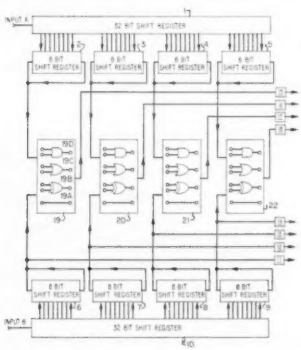
SCANNING LIGHT EMITTING DIODE DISPLAY OF DIGITAL INFORMATION

C. Mark Baker, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 21, 1972, Ser. No. 290,906

Int. Cl. G08b *5/36*; **H03k** *21/18*

U.S. Cl. 340—172.5 **6 Claims**



A digital logic display in which a row of light emitting diodes (LED's) is used to indicate the logic state of each bit of a sequence of bits present at one input. Another row of light emitting diodes is used in one mode to indicate the logic state of each bit of a sequence of bits present at another input, and in another mode to indicate the logic state of each bit of a sequence of bits that result from performing a pre-selected Boolean operation on corresponding bits of the two input sequences. By means of associated digital circuitry, the original input bit sequences are broken up into shorter sequences which are cycled in closed loops in a series of shift registers, thereby preserving the original data intact while sampled bits are subjected to preselected Boolean operations. Also this procedure facilitates the use of a scanning mechanism whereby each output LED is responsive to the logic state of selected bits only periodically.

3,805,256

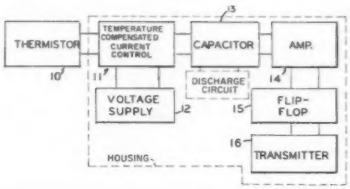
NEW TEMPERATURE SONDE

Theodore John Pepin, Laramie, Wyo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1972, Ser. No. 316,634

Int. Cl. G08c *19/12*

U.S. Cl. 340—208 **4 Claims**



The invention disclosed herein relates to an improved temperature sensing device of the radio sonde type and more particularly includes a bead thermistor remotely mounted from the housing containing unique circuitry for telemetering measured temperature by frequency modulating the output of the transmitter tube by utilizing the variable resistance characteristics of the thermistor in the current circuit for charging a capacitor that is automatically discharged when a given voltage is reached. Included within the circuitry is a flip-flop circuit for frequency modulating the broadcast frequency.

3,805,257

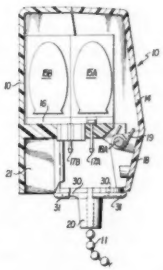
COMBINED FIRE AND BURGLAR ALARM

Alan L. Litman, Hartwood Dr., Pittsburgh, Pa.; Norman C. Eisenstat, 716 Linden Ave., Pittsburgh, Pa., and Don R. Horowitz, 5464 Darlington Rd., Pittsburgh, Pa.

Filed May 11, 1972, Ser. No. 252,224

Int. Cl. G08b *19/00*

U.S. Cl. 340—219 **7 Claims**



A self-powered combined burglar and fire alarm is provided employing a plurality of self-powered photoflash transmitter units that are selectively triggered into operation by burglar activity or by fire to produce a high intensity pulse of light. A centralized detector responds to the light pulse produced by

anyone of these triggered units to annunciate the fire or the presence of the intruder.

3,805,258

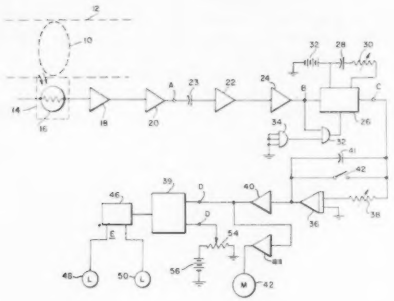
PULVERIZED COAL COMBUSTION DETECTOR

Paul Longrigg, Carrollton, Tex., assignor to Forney Engineering Company, Dallas, Tex.

Filed July 31, 1972, Ser. No. 276,872

Int. Cl. G08b *21/00*

U.S. Cl. 340—228.2 **11 Claims**



The pulverized coal combustion zone at the mouth of each burner of a furnace comprising a number of such units, is viewed by a sensor of molecular carbon radicals, producing a fluctuating output signal when the corresponding burner unit is in operation. Such signal passes through a differential amplifier and line driver to a differential variable preset gain amplifier by way of a capacitor coupling; and from the amplifier to a zero crossing (Schmitt Trigger) detector. The resulting pulsed signal of the detector goes to a monostable multivibrator having a pulse width adjustment. The one-shot output pulses of the multivibrator pass by way of an adjustable slope control on analog integrator of such one-shot pulses, having a DC output of one selected voltage range for actual combustion "ON" and a lower selected voltage range for combustion "OFF". Such DC voltage output goes to a one-bound comparator, and then through a variable delay circuit to either a Red combustion "ON" or a Green combustion "OFF" lamp.

3,805,259

SMOKE AND FIRE ALARM SYSTEM

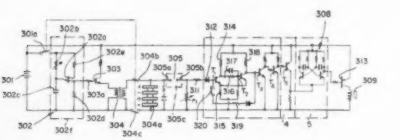
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research (IJR) Inc., Midoriku, Yokohama, Japan

Filed Oct. 18, 1971, Ser. No. 190,050

Claims priority, application Japan, Dec. 29, 1970, 45-133533; Dec. 29, 1970, 45-133534; Dec. 29, 1970, 45-133535; Jan. 28, 1971, 46-3104; Feb. 3, 1971, 46-4129

Int. Cl. G08b *17/10, 17/06*

U.S. Cl. 340—237 S **30 Claims**



A system for of detecting smoke or fire at a protected site, comprising a spark gap connected against the source of breakdown potential and exposed to the ambient air at the site. The improvement is based upon the discovery that particles present in smoke or the products of combustion induce a premature breakdown of the normally dielectric gas in the gap to initiate a signal which can be used to control a device or to alarm personnel in the region of the protected site.

3,805,260

AUTOMATIC INTRUDER ALARM

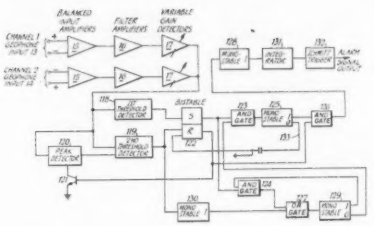
Peter Jack Barowitz, Century Works Lewisham, London S.E. 13, England

Filed May 19, 1972, Ser. No. 255,040

Claims priority, application Great Britain, Nov. 30, 1967, 54626/67

Int. Cl. G08b *13/22*

U.S. Cl. 340—258 B **9 Claims**



An alarm system uses seismic vibration detectors (geophones) for detecting the movement of persons or vehicles in an area. Adjacent groups of one or more detectors in an array are connected respectively to two separate wiring circuits which are connected to alarm output means, adjacent groups of detectors in each wiring circuit being connected in anti-phase with each other. Electrical means suppresses signals outside a predetermined vibration pattern.

3,805,261

NAVIGATIONAL PROCESS AND DEVICE FOR PATH CONTROL

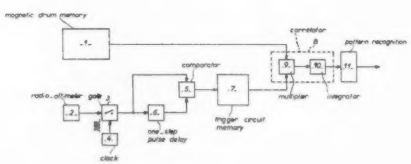
Jacques Desire Deschamps, Saint-Cloud, and Andre Adamsbaum, Boulogne-Billancourt, both of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Feb. 25, 1964, Ser. No. 347,996

Claims priority, application France, Feb. 27, 1963, 63.926258

Int. Cl. G01s *9/00*

U.S. Cl. 343—5 MM **10 Claims**



A process for controlling the course of a body in motion by comparison of a known relief plot of a surveyed zone with a sounding plot obtained during the passage of the body over said zone, comprising storing a plurality of patterns of binary digits wherein each pattern corresponds to a different and known strip of the said zone, said binary digits being representative of the algebraical sign of the difference in heights between predetermined points of said strip, translating said sounding plot into a pattern of binary digits representative of the algebraical sign of the difference between readings taken

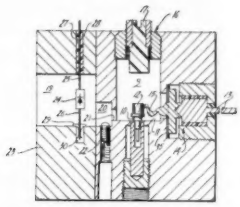
in spaced conformity with said predetermined points, and correlating the translated pattern with each of the stored patterns of binary digits and thus obtaining the degree of concordance thereof.

3,805,262

TRANSMISSION ANTENNA MIXER DOPPLER MOTION DETECTION

Carl F. Klein, Milwaukee, and Alfred Giovanelli, Kenosha, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed July 3, 1972, Ser. No. 268,526
Int. Cl. G01s *9/42, 9/44*
U.S. Cl. 343—5 PD **11 Claims**



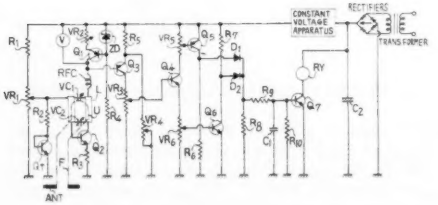
An intrusion Doppler motion detector detects the motion of a human intruder into a selected volumetric space. An oscillator of the avalanche or IMPATT diode type operating above 5GHz is mounted within an oscillator cavity and establishes and transmitts an RF field to a separate mixer cavity which also functions as a transmitting waveguide for feeding a common transmitting and receiving antenna. A separate mixer diode is coupled to the mixer cavity and thereby exposed to both the transmitted and the echo signal to produce a Doppler frequency output signal. A signal processing circuit is connected to the mixer diode and actuates an alarm in response to the Doppler signal.

3,805,263

SYSTEM FOR DETECTING AN OBJECT

Takeo Ueda, 1701 Hiyoshihoncho, Kohuku-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Aug. 15, 1972, Ser. No. 280,830
Int. Cl. G01s *9/42*
U.S. Cl. 343—5 PD **7 Claims**



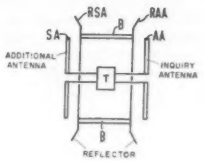
A detecting system including a low power UHF oscillator circuit. The oscillator is adjusted to a high impedance, and coupled to an antenna for radiating an extremely weak level signal therefrom. Signals re-radiated from a moving body are received by the antenna and change the oscillator frequency which is sensed to develop a control signal. The oscillator design provides a very high sensitivity detector in a simple and inexpensive circuit to reduce cost and power consumption.

3,805,264

INQUIRY-REPLY SYSTEM IN PARTICULAR SECONDARY RADAR DEVICE

Rudolf Bock, Schaftlach, and Gerhard Wagner, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 30, 1970, Ser. No. 85,557
Claims priority, application Germany, Nov. 14, 1969, 1957303
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **5 Claims**



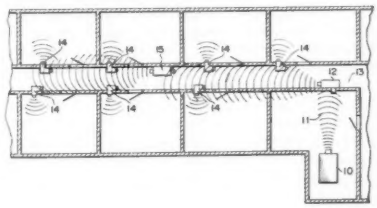
An inquiry-reply system utilizing a primary inquiry antenna which has a distinctive main lobe radiation pattern and less distinctive and smaller side lobes. An additional antenna is provided which has directional sensitivity arranged to be weakest in the area of the main lobe of the primary inquiry antenna and to be at a maximum in the vicinity of the side lobes of the antenna. False information is radiated by the additional antenna to disguise the inquiry code in the regions of the side lobes.

3,805,265

RADIANT WAVE LOCATING SYSTEM

Robert W. Lester, Manhasset, N.Y., assignor to RCDS Enterprises, Inc., New York, N.Y.

Filed Oct. 6, 1971, Ser. No. 186,877
Int. Cl. G01s *9/58*
U.S. Cl. 343—6.5 R **7 Claims**



A radiant wave electronic locating system for automatically locating a select group of persons or objects within a selected area of surveillance. Room sensors and a central console are linked together by radiant wave energy signals, which as light waves, acoustic waves, ultrasonic waves, microwaves, etc., which are coded and transmitted from the central console to track, locate or page a particular person. In one embodiment, signal transducers are common to a hallway and a room and transmit a coded signal present in the hallway into each adjoining room to page a personal pocket unit. In another embodiment, transceivers transmit a coded radiant wave signal in chain reaction from room to room by means of transceivers having a remote transducer, disposed through the wall of the room, to transmit the coded signal to the adjoining room. In a third embodiment of the invention, coded signals are transmitted throughout the rooms by carrier current at a selected frequency and one of three transducers present in the room units are activated to page the personal pocket unit of the person to be located. The pocket units receive the transmitted signal at the selected frequency, and transmit a return signal at

another selected frequency to the room unit, where this signal is encoded to a third frequency, and transmitted in chain reaction from room to room back to a transducer on the central console. The returned signal is then decoded to determine the location of the person. A pocket unit in the shape of a writing pen for use with the locating system is also disclosed.

3,805,266

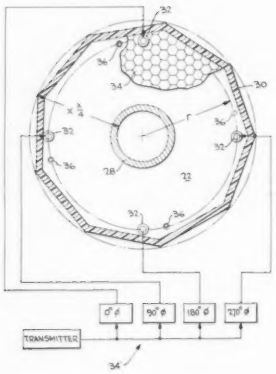
TURNSTILE SLOT ANTENNA

James C. Fletcher, Administrator of the National Aeronautics and space Administration with respect to an invention of, and Robert E. Munson, Salt Lake City, Utah

Filed Sept. 27, 1972, Ser. No. 292,685

Int. Cl. H01q *1/28*

U.S. Cl. 343—708 **7 Claims**



A novel turnstile slot antenna is disclosed, the antenna being for and integral with a spacecraft having a substantially cylindrical body portion. The antenna comprises a circumferential slot about the periphery of the spacecraft body portion with an annular wave guide cavity defining a radial transmission line disposed within the spacecraft body portion behind and in communication with the circumferential slot. Feed stubs and associated transmission apparatus are provided to excite the annular cavity in quadrature phase such that an omnidirectional, circularly polarized, rotating radiation pattern is generated. The antenna of the instant invention has utility both as a transmitting and receiving device, and ensures continuous telemetry and command coverage with the spacecraft.

3,805,267

AIRBORNE TELEMETERING RADAR

Collot Gerard, Saint-Germain En Laye, France, assignor to Electronique Marcel Dassault, Paris, France

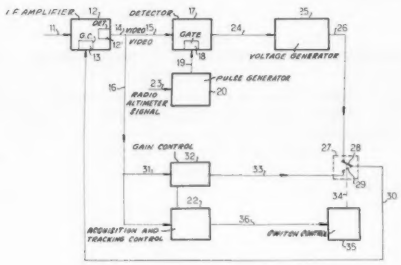
Filed June 6, 1972, Ser. No. 260,178

Claims priority, application France, June 8, 1971, 71.20757

Int. Cl. G01s *9/16*

U.S. Cl. 343—7.3 **5 Claims**

The present invention relates to an aircraft radar receiver for search and for tracking a target through one or more telemetry windows which, in the search phase, carry out distance scanning and which, on receiving a target echo, locks onto the same in order to supply telemetric information, said receiver comprising means for, during the search phase, desensitizing the radar receiver for the distance which corresponds to the altitude of the aircraft above the ground so that the altitude return signal does not cause the radar to switch to tracking state, wherein the desensitization means are



inoperative when the altitude return signal occurs in the radar tracking state.

3,805,268

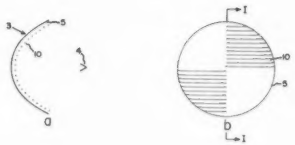
ANTENNA-POLARIZATION MEANS

Pope Patterson Britt, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Dec. 31, 1970, Ser. No. 116,691

Int. Cl. H01q *19/06, 15/22*

U.S. Cl. 343—756 **9 Claims**



A polarization sensitive phase shifter is applied to selected portions of the aperture of a reflecting antenna so as to produce similar primary and cross-polarized radiation phase patterns.

3,805,269

DIVERSE TYPE DIPOLE ANTENNAS ON COMMON MOUNT

Kyohei Fujimoto, Fujisawa; Nobuyuki Suyama, Chigasaki; Yoshiyasu Hiroi, Yokohama; Hideo Ito, Yokohama; Hiroshi Haruki, Yokohama; Takao Ogawa, Yokohama, and Tsutomu Kobayashi, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 12, 1972, Ser. No. 261,973

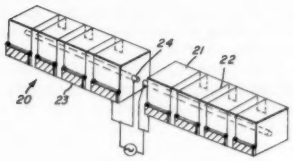
Claims priority, application Japan, June 14, 1971, 46-50485; June 14, 1971, 46-50484; June 14, 1971, 46-50487

Int. Cl. H01q *9/16*

U.S. Cl. 343—794 **1 Claim**

An antenna means comprising a linear element of a conductor having a length sufficiently shorter than a half wavelength and a plurality of parallel two-wire type distributed constants transmission lines short-circuited at the free end thereof, said transmission lines being sequentially arranged along the linear

conductor element and connected to the same element, whereby compensation of the impedance characteristics of



the antenna is achieved without decreasing the antenna efficiency.

3,805,270

VEHICLE DATA RECORDING DEVICE

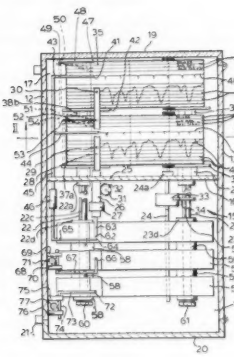
Peter John Grant, 49 Manor Rd. South, Esher, Surry, and Alan Jebb, Cheyne Close, Keston Mark, Bromley, Kent, both of England

Filed Apr. 24, 1972, Ser. No. 246,928

Claims priority, application Great Britain, Apr. 24, 1971, 11232/71

Int. Cl. G07c *5/08*

U.S. Cl. 346—44 **9 Claims**



The present invention relates to a device for recording data relating to a motor vehicle comprising means for recording data relating to the vehicle at a first location on the vehicle and means for recording data relating to the vehicle at a second location on the vehicle, the recorded data at said first location being accessible to a first class of persons and the recorded data at said second location being accessible only to a second class of persons.

3,805,271

Patent Not Issued For This Number

3,805,272

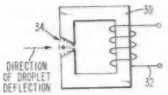
RECORDING SYSTEM UTILIZING MAGNETIC DEFLECTION

George J. Fan, Ossining, and Richard A. Toupin, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,822

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **10 Claims**



An ink jet recording system including means for producing a stream of high speed ferrofluid ink droplets, magnetic deflection means for deflecting said ink stream, said magnetic deflecting means including two spaced pole pieces forming an air gap therebetween located so that said ink stream passes therethrough, said gap being shaped to form a gradient magnetic field therein, said gap further being shaped so that movement of said ink stream in a direction normal to the gradient magnetic field does not result in the ink stream striking a pole piece. Said system is further characterized by a plurality of magnetic deflection means located in the path of said ink stream wherein each deflecting means is capable of applying an increment of deflecting force to said stream.

3,805,273

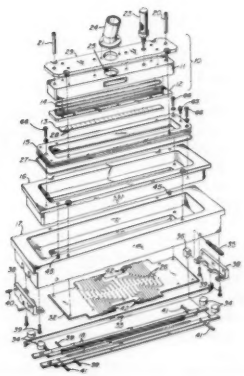
YOKE MOUNTED JET DROP RECORDING HEAD

Cyrus T. Brady, Dayton; Peter L. Duffield, Kettering, and Philip H. Houser, Chillicothe, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 20, 1972, Ser. No. 317,076

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **5 Claims**



There is disclosed a recording head for a jet array recorder wherein the electrical components thereof are attached to a supporting yoke and the fluidic components thereof are

suspended within the yoke. The primary fluidic components are separately assembled as a manifold subassembly and suspended inside a wobble plate. The wobble plate in turn is inserted inside an inner yoke, and rides within an "O" ring which provides freedom of movement for vertical adjustment and tilting. Thus the manifold subassembly, which includes an orifice plate provided with one or more rows of jet orifices, may be accurately positioned with respect to the inner yoke. In final assembly the inner yoke is mounted inside the main supporting yoke to which the electrical components have been attached and aligned. A set of dowel pins is provided to insure alignment between the inner yoke and the outer yoke.

There is also disclosed means for supplying a flow of purging air through the recording head and a magnetic catcher mounting arrangement. The purging air is supplied to an air tube fitting which attaches to the manifold subassembly. In the completed assembly the air flows around the outside of the orifice plate and then exits the recording head by flowing outwardly through apertures in a charge ring plate which is fastened to the lower surface of the main yoke. The catchers are mounted below the charge ring plate by attraction to a set of permanent magnets which are set into the lower surface of the main yoke.

3,805,274

INK JET RECORDING WITH CHARACTER DISTORTION COMPENSATION

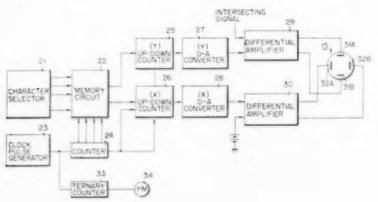
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,746

Claims priority, application Japan, Mar. 9, 1972, 47-23606

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **3 Claims**



Ink jet type recording apparatus comprising means for continuously jetting droplets of ink; an ink jet recording head provided with vertical and horizontal deflection means for vertically and horizontally deflecting the jetted ink droplet; driving means for driving the recording head, in plural steps corresponding to clock pulses and in a horizontal direction defined by the deflection means, across a recording paper during the time period in which one character is recorded; and means for sequentially generating vertical and horizontal deflection signals for respectively determining vertical and horizontal deflection amounts, in an attempt to define a character consisting of a plurality of ink droplets jetted according to the clock pulse, and supplying to the vertical and horizontal deflection means a character signal set in synchronism with the horizontal movement of the recording head.

3,805,275

DEVICE FOR PRODUCING A SEQUENTIAL, NON-COHERENT, REDUNDANT, OPTICAL DATA STORAGE

Horst Kiemle, and Hartwig Ruell, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

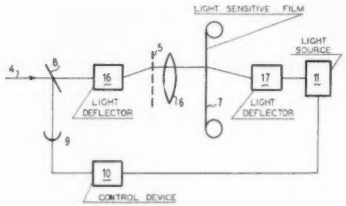
Filed Sept. 21, 1972, Ser. No. 290,796

Claims priority, application Germany, Sept. 29, 1971, 2148649

Int. Cl. G11b *7/00*; **G02b** *27/38*

U.S. Cl. 346—108 **7 Claims**

The present invention is directed to a device for producing sequential, non-coherent, redundant, optical data storage. The device includes a source producing a non-coherent light which is modulated to produce a pulse-amplitude-modulation and then directed onto a hologram such as a one-dimensional hologram to produce a signal exposure on a light sensitive tape. The exposure of the tape by the signal exposure can be a contact exposure or the device can include an optical system such as lenses for directing the light onto the tape. To improve the ability of reading the stored data, the device includes means for applying a correction exposure to compensate for fluctuation in the intensity of the signal exposure. One embodiment utilizes a beam splitter for dividing out a portion of the pulse-modulated light, a detector to detect the intensity of



the divided out portion, which detector generates a signal utilized by electronic control device that controls the operation of the source providing a light beam used to produce the correction exposure. In another embodiment, the light beam is first polarized in one direction and then modulated by rotating the direction of polarization and passed through a polarization separator which produces two beams with different directions of polarization. One beam is projected directly onto the tape to produce the correction exposure and the other beam passes through the one-dimensional hologram to produce the signal exposure. In each of the embodiments a fast light deflector may be utilized and a plurality of one-dimensional holograms utilized to enable recording multichannels of data on the tape.

3,805,276

INK JET RECORDING APPARATUS

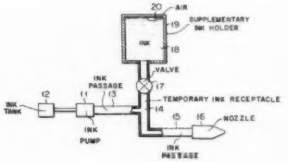
Hiroshi Ishii, Sagamiko-machi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 315,905

Claims priority, application Japan, Dec. 25, 1971, 46-335; Dec. 30, 1971, 46-3173

Int. Cl. G01d *15/18*

U.S. Cl. 346—140 **4 Claims**



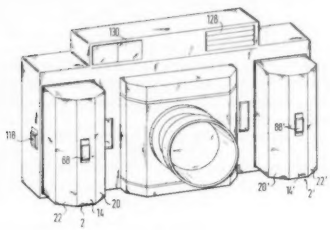
An ink jet recording apparatus supplying a nozzle with ink through an ink passage from an ink tank and ejecting the ink

from the nozzle for printing wherein there is provided in the ink passage a means for removing air carried into the ink. The air removal means includes a supplementary ink holder and a valve which couples the receptacle during a non-printing period for removal of the air.

3,805,277
STILL PICTURE CAMERA HAVING TWO FILM CASSETTES

Hans Domnick, Bismarckstrasse 69, 1 Berlin 39, Germany

Filed Nov. 6, 1972, Ser. No. 303,983
Claims priority, application Germany, Dec. 2, 1971, 2159858
Int. Cl. G03b *19/06*
U.S. Cl. 354—21 **20 Claims**



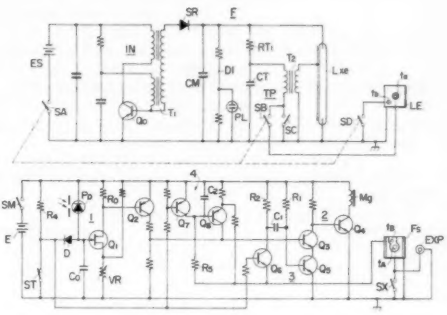
A still picture camera is equipped with two cassettes releasably mounted in the camera housing on either side of the lens and pressure plate. The body portion of each cassette holds a supply spool for a roll of film, and the take-up spool is mounted in an insert position normally set in an opening of the body portion. When the cassette is received in the camera housing, the insert portion is automatically released from the body portion and coupled to an operating mechanism in the camera housing which moves the insert portion across the back of the housing, and thereby places a frame of film on the pressure plate. Provisions are made for advancing the film by one frame from the supply spool to the take-up spool during each reciprocating cycle of the insert portion. A film sensitivity setting on the cassette is automatically connected to the automatic exposure control of the camera when the insert portion is withdrawn by the operating mechanism. Thus, respective frames of two films may be exposed alternatingly or cassettes carrying yet additional films may be substituted quickly for providing a wide choice of film types and speeds in consecutively exposed pictures without loss of unexposed film or risk of double exposure.

3,805,278
ELECTRONIC SHUTTER MEANS FOR PHOTOGRAPHIC CAMERAS

Soichiro Matsuzaki, and Isao Kondo, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo-to, Japan

Filed June 5, 1973, Ser. No. 367,227
Claims priority, application Japan, June 7, 1972, 47-56630
Int. Cl. G03b *7/08*
U.S. Cl. 354—33 **3 Claims**

An electronic shutter means for photographic cameras provided with two time limiting circuits capable of limiting the exposure time decided by the light measuring circuit to a value within the range between the exposure time required for

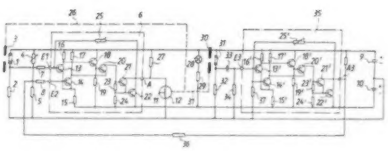


achieving perfect synchronization of the shutter operation to light emission of the flash lamp and the exposure time with which camera-shake can be prevented.

3,805,279
ILLUMINATION CONTROL ARRANGEMENT FOR PHOTOGRAPHIC CAMERAS

Engelbert Fliesser; Karel Pustka, and Eduard Wagensonner, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 6, 1971, Ser. No. 176,757
Claims priority, application Germany, Oct. 6, 1970, 2049110
Int. Cl. G03b *7/10*
U.S. Cl. 354—43 **15 Claims**



An arrangement in photographic cameras in which the diaphragm is positioned through an electromagnetically operated setting device with damped motion. A first voltage divider has a light-sensitive element and is connected to one terminal of a difference amplifier. A second voltage divider is connected to the second terminal of the difference amplifier and serves as a source of reference voltage against which the voltage signals from the first voltage divider containing the light-sensitive element is compared. The output of the difference amplifier is connected to the diaphragm-setting device which, in turn, positions a voltage generator that provides a voltage signal dependent upon the velocity of the diaphragm-

setting device. This velocity-dependent voltage signal is applied to the second voltage divider so as to result in damped motion of the setting device.

3,805,280

EXPOSURE CONTROL SYSTEM FOR PHOTOGRAPHIC APPARATUS

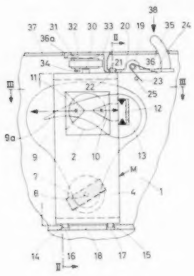
Gerhard Boerner, Musberg, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Sept. 27, 1972, Ser. No. 292,629

Claims priority, application Germany, Oct. 8, 1971, 2150250

Int. Cl. G03b *9/02*; **G01j** *1/42*

U.S. Cl. 354—43 **8 Claims**



A photographic apparatus wherein the entire exposure control system constitutes a single prefabricated module which is detachably mounted in the photographic apparatus and whose components include an adjustable diaphragm, an electric circuit which adjusts the diaphragm as a function of scene brightness, a prism for deflecting a first portion of incoming scene light into the view-finder, and a mirror for directing a second portion of incoming scene light against a photoelectric transducer of the electric circuit. The transducer may constitute the energy source of the circuit. Alternatively, a discrete source of electrical energy may be mounted in the photographic apparatus or directly in or on the frame of the module. The energy source can be installed on a detent lever for the module so that it can be reached in response to pivoting of the lever from an operative position.

3,805,281

RECEIVER FOR REMOTE CONTROLLING A SHUTTER OF A CAMERA

Kenichi Narita, 3-4-4 Fuji-cho, Hoya, Tokyo, and Shiuji Yoshizawa, Toei-Tokyokaido-Daichijutaku-Minami 102-2, Shimizu Oaza, Higashi-Yamoto, Tokyo, both of Japan

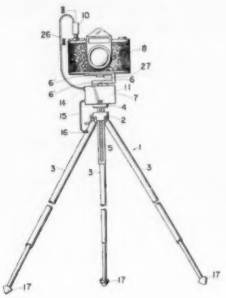
Filed Oct. 2, 1972, Ser. No. 294,155

Claims priority, application Japan, Oct. 2, 1971, 46-90406; June 1, 1972, 47-64957

Int. Cl. G03b *17/56*

U.S. Cl. 354—81 **4 Claims**

A remotely controlled photographic system embodying a camera mounted on a lifting member forming part of an adjustable tripod, the leg members of which are electrically connected through the lifting member to the input of a receiver also carried by the lifting member, the output of the receiver actuating a shutter-release mechanism of the camera.



3,805,282

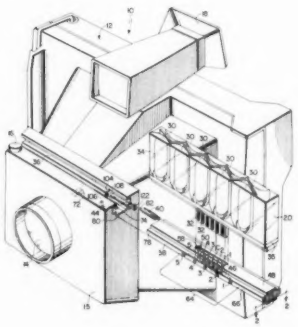
PHOTOGRAPHIC APPARATUS HAVING MECHANICAL INDEXING MEANS FOR A MULTI-LAMP FLASH UNIT

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1972, Ser. No. 319,535

Int. Cl. G03b *15/03*

U.S. Cl. 354—144 **22 Claims**



A photographic apparatus, e.g., a camera, having a flash socket thereon for receiving a multi-lamp flash unit having a plurality of flash lamps arranged in a linear array. The socket is mounted for linear movement relative to a fixed lamp firing position on the apparatus and an indexing mechanism is provided for incrementally moving the socket relative to the fixed firing station to successively present each lamp in the array at the fixed position for firing.

3,805,283

CHART CREATION APPARATUS

William P. Castle, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 13, 1973, Ser. No. 351,126

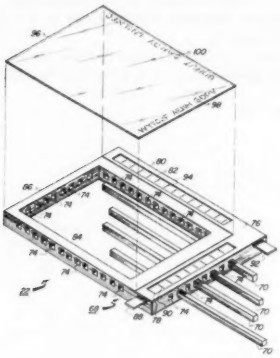
Int. Cl. G03b *27/02*

U.S. Cl. 354—292 **6 Claims**

An apparatus arranged to create an original chart which is disposed on a platen of a multi-color electrophotographic

printing machine for producing color copies thereof.

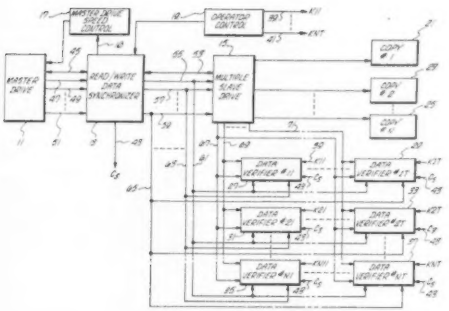
The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.



3,805,284
DIGITAL DATA COPY DUPLICATION METHOD AND APPARATUS UTILIZING BIT TO BIT DATA VERIFICATION

Lewis Buel Coon, Jr., Thousand Oaks, and Hermann Walter Stocker, Ventura, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 18, 1972, Ser. No. 289,779
Int. Cl. G11b *5/86, 27/36*
U.S. Cl. 360—15 **6 Claims**

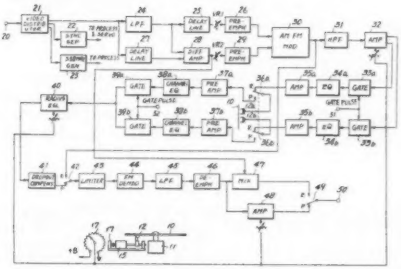


Master quality copies of digital data are generated by a method and apparatus that provides bit to bit data verification for each track of data on the produced copies. The integrity of the data on the copies being generated is verified by comparing, on a continuous flow basis, data written on the copies with the same data read from the copies. A data storage device stores the data written on the copies and provides it for comparison with data read from them. The data stored in the storage device is verified before being read out. Detection and indication that the number of clock bits written on the respective copies equals the number of clock bits read from them is provided as further verification of the copies.

3,805,285
SIGNAL MODULATING AND DEMODULATING SYSTEM WITH MEANS FOR MAKING THE UPPER AND LOWER SIDE-BANDS ASSYMMETRICAL

Hisao Kinjo, and Keigo Okano, both of Tokyo, Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Filed Apr. 25, 1972, Ser. No. 247,419
Claims priority, application Japan, Apr. 26, 1971, 46-27453; Apr. 26, 1971, 46-27454
Int. Cl. G11b *5/82, 5/04;* **H04n** *5/78*
U.S. Cl. 360—29 **10 Claims**

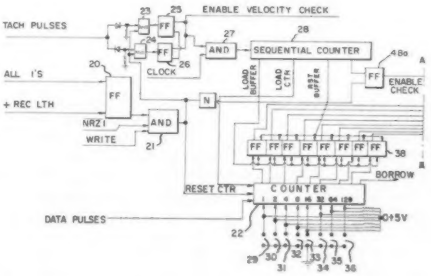


A signal modulating and demodulating system generally comprises means for amplitude modulating at least a part of a signal, means for making the upper and lower side-bands of the amplitude modulated wave asymmetrical, and means for frequency demodulating the amplitude modulated wave having asymmetrical upper and lower side-bands. By magnetically recording and reproducing the amplitude modulated wave, it has its upper and lower side-bands made asymmetrical due to an electromagnetic conversion characteristic and is converted into a frequency modulated wave.

3,805,286
TAPE VELOCITY DETECTOR

Thomas S. Kavanagh, and William H. Bunker, both of Boulder, Colo., assignors to Storage Technology Corporation, Boulder, Colo.

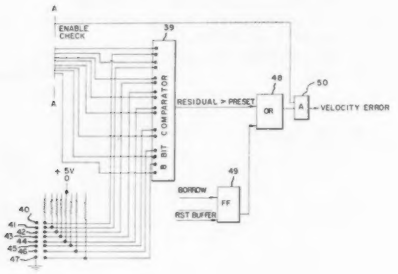
Filed Feb. 1, 1973, Ser. No. 328,730
Int. Cl. G06f *11/00*
U.S. Cl. 360—51 **3 Claims**



In a magnetic recording and playback system a detector indicates the velocity of the magnetic tape. The number of data bits read back in a given interval of time is compared with a preset number. If the number of data bits counted exceeds the preset number, it is an indication of slippage between the capstan and magnetic tape.

A tachometer generates tachometer pulses related to the speed of the capstan. Data bits read back between successive

tachometer pulses decrement a counter which is preset at the beginning of each tachometer period with a given count. If the counter is decremented through zero during any tachometer period, a signal indicating possible tape slippage (tape velocity



slow) is produced. The number of counts remaining in the counter at the end of each interval is compared with another preset number to determine whether the tape velocity is too high.

3,805,287

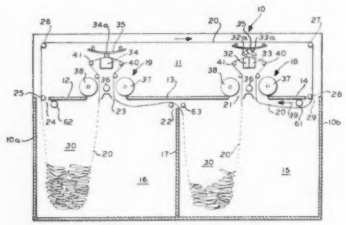
ENDLESS LOOP TAPE-RECORDING HAVING SINGLE CAPSTAN BI-DIRECTIONAL DRIVE AND TAPE RUN ABOVE RECORDING STATION

Peter J. Totino, Union City, N.J., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Apr. 24, 1972, Ser. No. 246,934

Int. Cl. G11b *15/29, 23/12*

U.S. Cl. 360—62 **8 Claims**



An endless loop tape-record machine comprises dictating and transcribing stations and respective tape storage bins therebelow placed end-to-end. The tape is drawn from the far end of the transcriber's bin across the two stations and back into the far end of the dictator's bin. Excess tape is stored folded in loops back and forth on itself in the transcriber's bin as the transcriber catches up with the dictator, and in the dictator's bin as the dictator runs ahead more and more from the transcriber. Each station has a single motor drive with a friction-wheel train engaged by the weight of the motor and shiftable by drive and scan solenoids to drive the tape at either normal forward speed or at scan speeds in either direction. A suspensory band at the bottom of the transcriber's bin is attached at one end to a yieldable support for operating a switch by the weight of the tape to give a first preliminary warning to the dictator as he comes to an intermediate point along the tape — say 4 or 5 minutes of using up the available tape, and for giving a near-end warning as he approaches the end of the available tape.

3,805,288

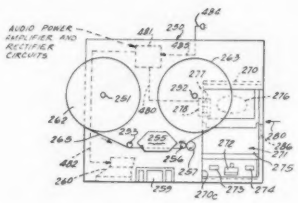
TRANSDUCER MACHINE FOR SLIDEABLE RECEPTION OF AND AUTOMATIC ELECTRIC CIRCUIT CONNECTION WITH A HAND HELD TYPE SELF-CONTAINED TAPE RECORDER

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Division of Ser. No. 831,352, June 9, 1969, Pat. No. 3,686,433. This application June 1, 1972, Ser. No. 258,750

Int. Cl. G11b *31/00*

U.S. Cl. 360—91 **4 Claims**



A magnetic transducer system for selective audio or video operation with movable guides for shifting the tape path between audio, video and rewind positions, or with fixed guides defining both an audio and video tape path, the audio tape path being clear of the video head, for example. A video transducer with a receptacle removably receiving and providing external energization for a battery powered audio transducer unit.

3,805,289

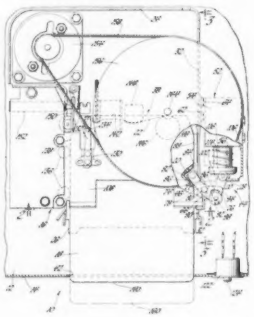
TAPE CARTRIDGE RETAINING AND EJECTING MECHANISM

James H. Guyton, and Larry W. Taylor, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 129,387, March 30, 1971. This application Mar. 1, 1973, Ser. No. 337,128

Int. Cl. G11b *5/00*

U.S. Cl. 360—93 **7 Claims**



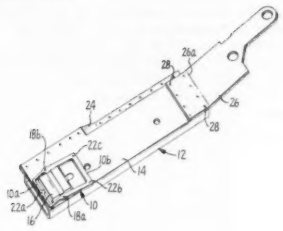
In a preferred form, a tape cartridge retaining and releasing mechanism for tape players includes a retention lever pivotally mounted on a resilient arm which extends along one side of a cartridge receiving chamber. A remotely operated actuator acting through a linkage arrangement shifts the retention lever and a cartridge inserted into the chamber between two locked positions corresponding to cartridge play and eject locations, respectively. At the latter location, the mechanism is conditioned so that the cartridge can be removed or directly repositioned to the play location.

3,805,290

RECORDING HEAD FLEXURE

Herbert E. Thompson, Los Gatos, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Oct. 24, 1972, Ser. No. 300,273
Int. Cl. G11b 5/60
U.S. Cl. 360—103 4 Claims



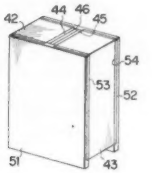
A flexure for mounting a recording head slider to an access arm in a disk recording machine which provides stiffness in certain translational and rotational directions and flexibility in other direction, the flexure having a rectangular frame of a leaf spring material secured at two opposite points to a recording head slider and secured at three discrete points to the access arm.

3,805,291

MAGNETIC HEAD HAVING IMPROVED HEAD GAP PORTION

Yo Sakurai, Kunitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1972, Ser. No. 225,227
Claims priority, application Japan, Feb. 10, 1971, 46-5242
Int. Cl. G11b 5/20, 5/40, 5/22
U.S. Cl. 360—120 5 Claims



A magnetic head having a head coil formed by a thin copper plate embedded in the magnetic head gap at the vicinity of the foremost end of the head core and lead-out conductors connected electrically to respective ends of said copper plate and plated to essentially cover the sides of the head assembly.

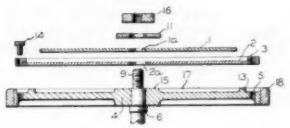
3,805,292

MAGNETIC RECORDING DISC USING A MAGNETIC SHEET HELD ON A STRETCHED FLEXIBLE SHEET

Susumu Hashiguchi, and Tetsuo Hino, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed July 21, 1972, Ser. No. 273,967
Claims priority, application Japan, July 29, 1971, 46-57364; July 23, 1971, 46-55343; July 23, 1971, 46-55345
Int. Cl. G11b 5/82
U.S. Cl. 360—135 5 Claims

A magnetic recording disc comprises a magnetic sheet for recording and reproducing signals by a magnetic head, a rotating disc, a flexible sheet carried by a ring, and a holding means. The flexible sheet is mounted on the rotating disc by the ring so as to form a flat and tensional surface. The magnetic sheet is held on the flexible sheet by the holding means so that the magnetic sheet is in close contact with the magnetic head along with the flat and tensional surface of the flexible sheet mounted on the rotating disc.

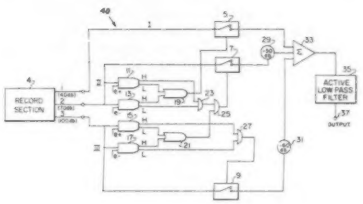


3,805,293

SIGNAL PROCESSING SYSTEM

Alan P. Weinberger, and Harry L. Keller, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 1, 1972, Ser. No. 258,690
Int. Cl. G11b 15/02, 27/02; G01v 1/00
U.S. Cl. 360—55 4 Claims



A system for recording and processing signals such as seismic signals is disclosed. The signals are recorded on three channels in phase. The output of each channel has a gain of 30 db relative to the preceding channel. The processing circuitry has first, second and third stages that are connected to the first, second and third output channels of the recorder, respectively. First, second and third switches are also connected to the first, second and third output channels of the recorder. The three switches are connected to an output amplifier whose output is connected to a low pass filter. The second and third stages include logic circuitry that controls the three switches such that only one switch is closed at any given time. The particular switch closed at any given time depends upon whether or not the output signals from the second and third channels of the recorder saturate the logic circuitry of the second and third stages of the processing circuitry. If the third stage is saturated but the second stage is unsaturated, the second switch will be closed and the first and third switches will be open. If the second stage is saturated, the third stage will also be saturated and, therefore, the first switch will be closed and the second and third switches will be open. If the third stage is unsaturated, the third switch will be closed and the first and second switches will be open.

DESIGNS

APRIL 16, 1974

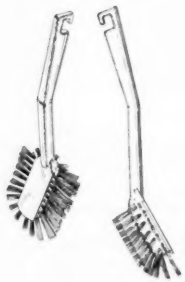
231,280
HAT ORNAMENT
Paul P. Miano, 246 Church St., Garyville, La. 70051
Filed Apr. 25, 1972, Ser. No. 247,503
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—263

231,281
TONGUE FOR A SHOE
Horst R. Dassler, Eckartswiller, France, assignor to Adidas, Landersheim, France
Filed Oct. 18, 1971, Ser. No. 190,435
Claims priority, application France Apr. 23, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—314

231,282
TONGUE FOR A SHOE
Horst B. Dassler, Eckartswiller, France, assignor to Adidas, Landersheim, France
Filed Oct. 18, 1971, Ser. No. 190,436
Claims priority, application France Apr. 23, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—314

231,283
DISH BRUSH
Per Lindbo, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed Nov. 20, 1972, Ser. No. 307,921
Claims priority, application Norway Sept. 4, 1972
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—31

231,824
DISH BRUSH
Per Lindbo, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed Nov. 20, 1972, Ser. No. 308,296
Claims priority, application Norway Sept. 4, 1972
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—31

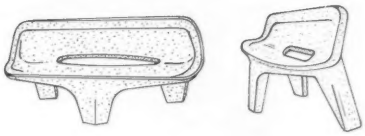


231,285
CRIB END
Robert V. Jacobs and Allen D. Jacobs, Los Angeles, Calif., assignors to Questor Corporation, Toledo, Ohio
Filed June 22, 1972, Ser. No. 279,221
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14

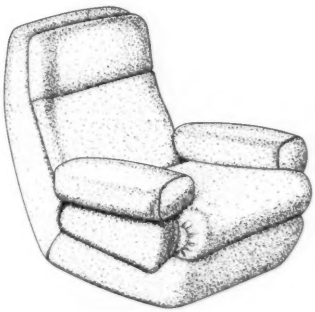
231,286
CHAIR OR SIMILAR ARTICLE
Karl Dittert, Schwabisch Gmund, Germany, assignor to Giroflex-Entwicklungs-AG, Koblenz, Switzerland
Filed Sept. 1, 1972, Ser. No. 285,804
Claims priority, application Switzerland Apr. 12, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

231,287
BICYCLE SEAT
Alfred S. Robinson, P.O. Box 7431, Pine Bluff, Ark. 71601
Filed Sept. 29, 1972, Ser. No. 293,512
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D6—48.1

231,288
BENCH
James E. Miller, Birmingham, Mich., assignor to Form, Incorporated, South Lyon, Mich.
Filed Apr. 25, 1972, Ser. No. 247,507
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—59

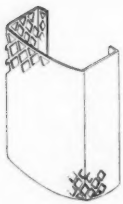


231,289
EASY CHAIR
Jean Prevost, 18 Bis Rue Danielle Casanova, 94 Le Perreux, France
Filed July 19, 1972, Ser. No. 273,188
Claims priority, application France Feb. 4, 1972
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

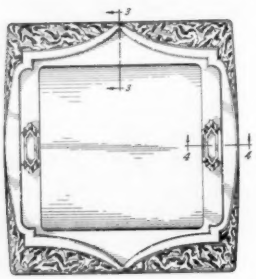


231,290
COMBINED ESCUTCHEON PLATE AND SUPPORTING POST
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Jan. 10, 1972, Ser. No. 216,871. Divided and this application Apr. 30, 1973, Ser. No. 355,552
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D6—86

231,291
SHOWER CURTAIN POCKET
Carlos N. Villaran, 5150 Sutton St. NW., Washington, D.C. 20016
Filed Feb. 19, 1971, Ser. No. 117,183
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—89

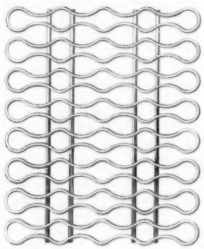


231,292
TISSUE HOLDER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Jan. 10, 1972, Ser. No. 216,871. Divided and this application Apr. 30, 1973, Ser. No. 355,332
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97

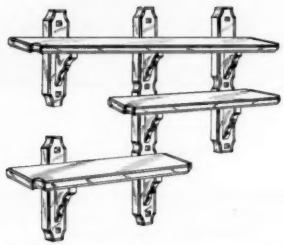


231,293
CABINET FOR A WALL-MOUNTED TELEPHONE
Frank J. Cosolito, Box 123, Ringwood, N.J. 07456
Filed Apr. 20, 1972, Ser. No. 246,107
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130

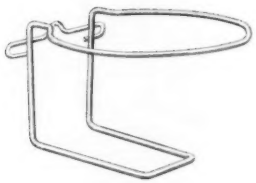
231,294
DISPLAY DEVICE FOR SKEINS OF YARN OR THE LIKE
Ray S. Mortenson, 16 Greene St., New York, N.Y. 10013
Filed Feb. 12, 1973, Ser. No. 331,840
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



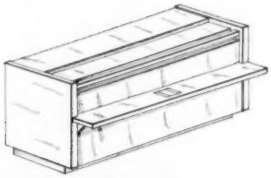
231,295
SHELVING ASSEMBLY
Eugene Brown, Rockville Centre, N.Y., assignor to Barclay Industries, Inc., Lodi, N.J.
Filed Feb. 25, 1972, Ser. No. 229,622
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—135



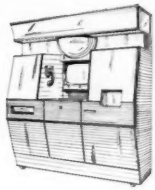
231,296
FLOWER POT AND SAUCER HOLDER
Muriel Morris and Herbert J. Morris, both of 36 Bellingham Lane, Great Neck, N.Y. 11023
Filed June 27, 1972, Ser. No. 266,777
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—137



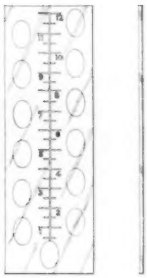
231,297
ELECTROCHEMICAL STORAGE AND RETRIEVAL UNIT FOR CARDS OR THE LIKE
Paul W. Porter, Marietta, Ohio, assignor to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 16, 1972, Ser. No. 300,396
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—174



231,298
CONSOLE FOR THE SALE OF TRAVEL INSURANCE
Irvin M. Lemon, Redondo Beach, Calif., assignor to Mutual of Omaha Insurance Company
Filed Oct. 31, 1972, Ser. No. 302,556
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—181

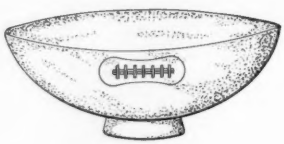


231,299
PHOTOGRAPH DISPLAY HOLDER
Viola M. Berchert, 3360 Pittsview, Ann Arbor, Mich. 48104
Filed July 27, 1972, Ser. No. 275,580
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234

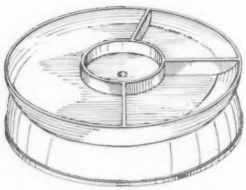


231,300
BOWL
Tauno Wirkkala, Utti, Mankki, Finland
Filed Apr. 14, 1972, Ser. No. 244,347
Term of patent 14 years
Int. Cl. D7—*01*; D11—*02*
U.S. Cl. D7—1

231,301
FOOD BOWL
John F. Krieger, Hales Corners, and Robert S. Block, Bayside, Wis., assignors to Breakthru Incorporated, Milwaukee, Wis.
Filed Apr. 28, 1971, Ser. No. 138,390
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—*5*

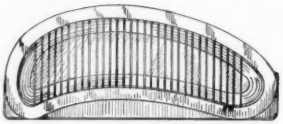


231,302
COMBINED DISH AND COVER
Walter Joseph Lukawski, 5 Rathbun Place, Brantford, Ontario, Canada, and Reuben Balofsky, 46 Clifton Ave., Downsview, Ontario, Canada
Filed May 6, 1971, Ser. No. 141,080
Claims priority, application Canada Apr. 5, 1971
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—17



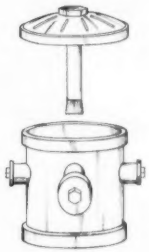
231,303
SERVING BOWL OR THE LIKE
Jack V. Croyle, Woonsocket, and Harold P. Ashton, Providence, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed July 22, 1971, Ser. No. 165,435
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—21

231,304
FRUIT SLICING MACHINE
Pius Dale Shultz, 16 Maple Road, York, Pa. 17403
Filed Sept. 5, 1972, Ser. No. 286,231
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—43



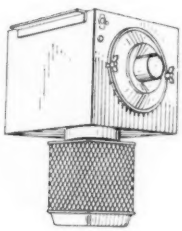
231,305
DISPENSER FOR CONDIMENTS OR THE LIKE
John W. Downey, Warren, Pa., assignor to Whirley Industries, Inc., Warren, Pa.
Filed Jan. 3, 1972, Ser. No. 215,278
Term of patent 14 years
The portion of the term of the patent subsequent to Jan. 29, 1988, has been disclaimed
Int. Cl. D7—*06*
U.S. Cl. D7—52

231,306
CONDIMENT CONTAINER
Paul J. Breglia, 680 Ramapo Road, Teaneck, N.J. 07666
Filed Mar. 27, 1972, Ser. No. 238,749
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—52

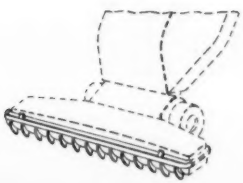


231,307
COFFEEMAKER
Lee Wolfman, 437 Summit St., Englewood Cliffs, N.J. 07632
Filed Jan. 5, 1972, Ser. No. 215,698
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

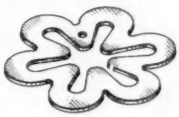
231,308
VACUUM MACHINE PRIMARILY TO BE COUPLED TO A TUBE TERMINATING ADJACENT A PARTICLE PRODUCING HANDTOOL
Anthony Henry James Brockman, London, England, assignor to Mizers Limited, London, England
Filed July 10, 1972, Ser. No. 270,159
Claims priority, application Great Britain Jan. 10, 1972
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166



231,309
SHAG RUG VACUUM ATTACHMENT
Manfred Schild, Berwyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 16, 1973, Ser. No. 324,031
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—173

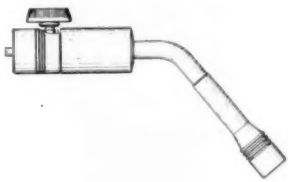


231,310
RING FOR HOLDING A PAIR OF SOCKS OR THE LIKE
James F. Burgher, 3528 NE. 97th, Seattle, Wash. 98115
Filed June 5, 1972, Ser. No. 260,063
Term of patent 3½ years
Int. Cl. D7—*05*
U.S. Cl. D7—198



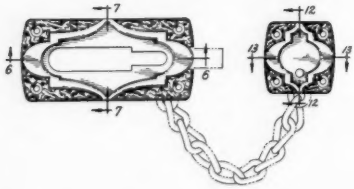
231,311
GARDEN SHEARS
Edward Albert Rogers, London, England, assignor to Wilkinson Sword Limited, London, England
Filed Dec. 23, 1971, Ser. No. 211,834
Claims priority, application Great Britain June 30, 1971
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5

231,312
VALVE ASSEMBLY FOR A BLOWTORCH
John M. Nelson and Milos Chvatal, Rochester, N.Y., assignors to Bernzomatic Corporation, Rochester, N.Y.
Filed May 26, 1972, Ser. No. 257,491
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



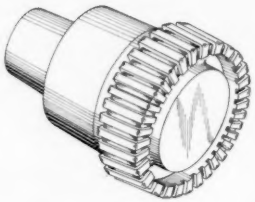
231,313
BOTTLE CAP OPENER
G. John Heelan, Olympia, Wash., assignor to Olympia Brewing Company, Olympia, Wash.
Filed Feb. 20, 1973, Ser. No. 333,790
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—38

231,314
CHAIN GUARD
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Jan. 10, 1972, Ser. No. 216,871. Divided and this application Apr. 30, 1973, Ser. No. 355,330
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—131



231,315
PULL FOR DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed June 8, 1973, Ser. No. 368,223
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—138

231,316
CONTROL KNOB FOR OFFICE MACHINES
James J. Bienkowski, Cazenovia, and Joseph A. Rauch, Syracuse, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Dec. 8, 1972, Ser. No. 313,201
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—145

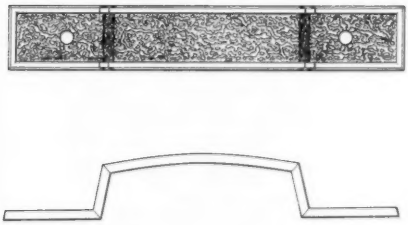


231,317
CONTROL KNOB FOR OFFICE MACHINES
Ellen V. B. Ludwick, Syracuse, N.Y., assignor to SCM Corporation
Filed Dec. 8, 1972, Ser. No. 313,204
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—145

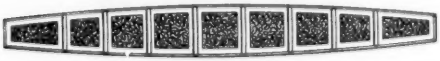
231,318
PULL FOR DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed Aug. 9, 1973, Ser. No. 387,121
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—145

231,319
PULL FOR DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed Aug. 9, 1973, Ser. No. 387,120
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—159

231,320
PULL FOR DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed June 8, 1973, Ser. No. 368,224
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166



231,321
PULL FOR DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed June 8, 1973, Ser. No. 368,225
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

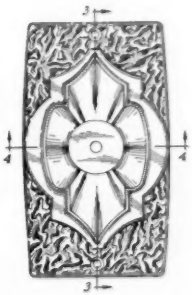


231,322
PULL FOR DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed Aug. 9, 1973, Ser. No. 387,118
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

231,323
PULL FOR DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed Aug. 9, 1973, Ser. No. 387,119
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

231,324
BACKING PLATE FOR PULL AS USED ON DOORS, DRAWERS AND THE LIKE
David F. James, Torrance, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed Aug. 9, 1973, Ser. No. 387,117
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179

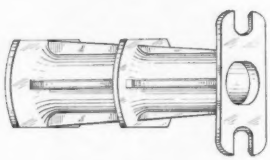
231,325
ESCUTCHEON PLATE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Jan. 10, 1972, Ser. No. 216,871. Divided and this application Apr. 30, 1973, Ser. No. 355,329
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—188



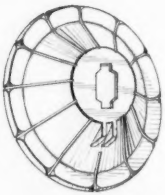
231,326
CURTAIN RAIL
Kiyotsune Miki, 73, 1-chome, Higashi-Kagaya-cho, Sumiyoshi-ku, Osaka-shi, Japan
Filed Oct. 14, 1971, Ser. No. 189,484
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—208

231,327
REEL
Orion L. Schultz, 7559 Locklin, Union Lake, Mich. 48085
Filed Jan. 5, 1973, Ser. No. 321,246
Term of patent 14 years
Int. Cl. D8—*08, 06;* D22—*05*
U.S. Cl. D8—220

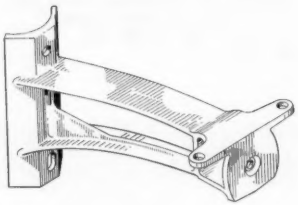
231,328
BOLT-RETAINER FOR PRECASTING IN CONCRETE
Roland G. Nasser, Newburgh, N.Y., assignor to Star Expansion Industries Corporation, Mountainville, N.Y.
Filed Apr. 17, 1972, Ser. No. 245,013
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—228



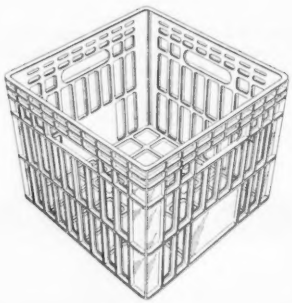
231,329
SUPPORT BASE FOR A FIXTURE
Leon M. Levy, Chicago, Ill., assignor to Selfix, Inc.
Filed Jan. 3, 1972, Ser. No. 215,283
Term of patent 14 years
Int. Cl. D8—*08;* D6—*06*
U.S. Cl. D8—233



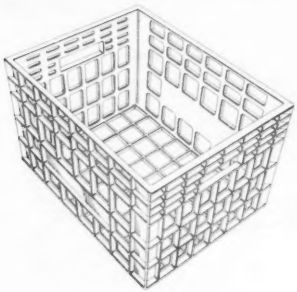
231,330
UTILITY POLE INSULATOR BRACKET
Joseph W. Dimicelli, 417 Eccles Ave., San Francisco, Calif. 94080
Filed July 19, 1972, Ser. No. 273,038
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234



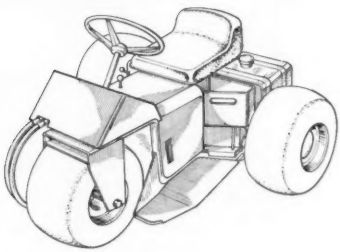
231,331
MILK CRATE
Alfred G. Stauble, Box 17, Hollis, N.H. 03049
Filed Mar. 2, 1972, Ser. No. 231,440
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177



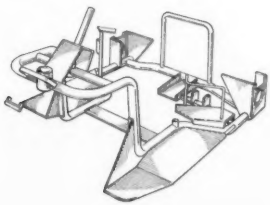
231,332
MILK CRATE
Alfred G. Stauble, Box 17, Hollis, N.H. 03049
Filed July 20, 1972, Ser. No. 273,445
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177



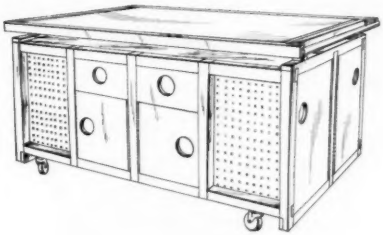
231,333
VEHICLE
Ronald E. Lewis, Hanover, N.H., and Robert D. Lampher, Burnsville, Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Oct. 25, 1972, Ser. No. 300,833
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—1



231,334
VEHICLE FRAME
Robert D. Lampher, Hanover, N.H., and Robert E. Lewis, Burnsville, Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Oct. 25, 1972, Ser. No. 300,834
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—1

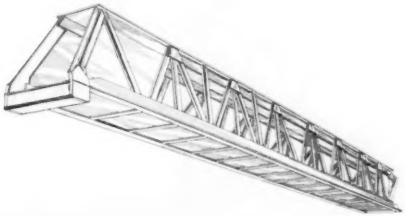


231,335
MOBILE FOOD PREPARATION UNIT
Ruth Allen, 199 St. Johns Place, Brooklyn, N.Y. 11217
Filed Apr. 12, 1973, Ser. No. 350,472
Term of patent 14 years
Int. Cl. D15—*08;* D12—*02*
U.S. Cl. D12—22



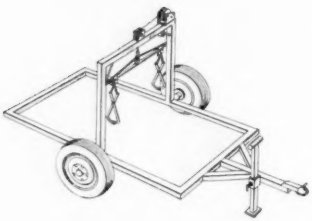
231,336
SHOPPING CART
Michael Wahl, Searington, Long Island, N.Y., assignor to Supermarket Environments Group Incorporated, Long Island, N.Y.
Filed Mar. 21, 1973, Ser. No. 343,668
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—25

231,337
BOOM SECTION FOR A TELESCOPIC CRANE BOOM
Stanley R. Spain, Greencastle, and Eugene C. Gardenhour, Waynesboro, Pa., assignors to Walter Kidde & Company, Inc., Clifton, N.J.
Filed May 8, 1973, Ser. No. 358,382
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D12—54

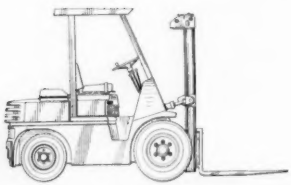


231,338
LIFTING JACK
John Joseph Fitzpatrick, 39 Acaster Drive, Sarforth, Leeds, Yorkshire, England
Filed Jan. 8, 1973, Ser. No. 321,946
Claims priority, application Great Britain July 13, 1972
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

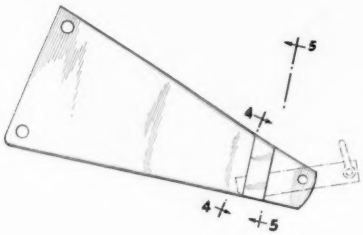
231,339
HOISTING TRAILER
Cleland H. Beatty, Burlington, N.C., assignor to Hayden Beatty Rambler Inc., Burlington, N.C.
Filed Oct. 6, 1971, Ser. No. 187,222
Term of patent 14 years
Int. Cl. D12—*05, 10*
U.S. Cl. D12—56



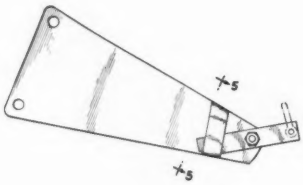
231,340
INDUSTRIAL LIFT TRUCK
Roy Douglas Haynes, Danbury, England, assignor to Lansing Bagnall Limited, Basingstoke, Hampshire, England
Filed Sept. 12, 1972, Ser. No. 288,326
Claims priority, application Great Britain Apr. 24, 1972
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



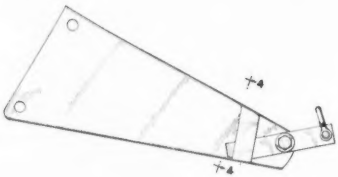
231,341
BOAT HOIST CAM PLATE
Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068
Filed Jan. 2, 1973, Ser. No. 319,983
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



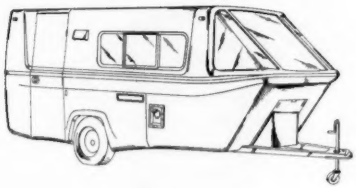
231,342
BOAT HOIST CAM LINKAGE
Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068
Filed Jan. 2, 1973, Ser. No. 320,556
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



231,343
REVERSIBLE BOAT HOIST LINKAGE
Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068
Filed Feb. 2, 1973, Ser. No. 320,558
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60

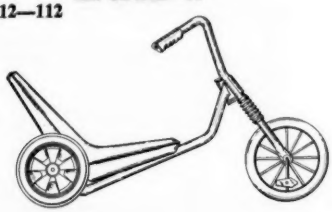


231,344
TRAVEL TRAILER
Hobart G. Miller, Glenview, Ill., and James F. Mariol, Cincinnati, Ohio, assignors to Apeco Corporation, Evanston, Ill.
Filed Aug. 24, 1972, Ser. No. 283,368
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103

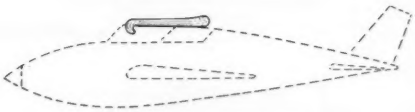


231,345
BICYCLE
Leroy H. Gutknecht, 202 Terrace Drive, Hudson, Iowa 50643
Filed June 19, 1972, Ser. No. 264,200
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111

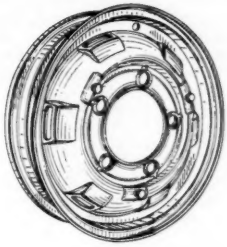
231,346
VELOCIPEDE
William R. Baynes, Palos Verdes Peninsula, and Raymond J. Douglas, Lomita, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 24, 1972, Ser. No. 309,575
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



231,347
AIRCRAFT REAR VIEW OPTICAL DEVICE
Asa P. Ruskin, 865 West End Ave., New York, N.Y. 10025
Filed Dec. 30, 1971, Ser. No. 214,534
Term of patent 14 years
Int. Cl. D12—*99;* D16—*06*
U.S. Cl. D12—187

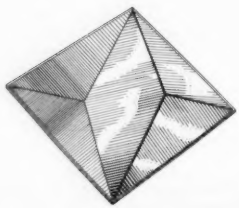


231,348
WHEEL RIM
Ture Gustav Svensson, Trollhattan, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Dec. 15, 1971, Ser. No. 208,523
Claims priority, application Sweden June 16, 1971
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209

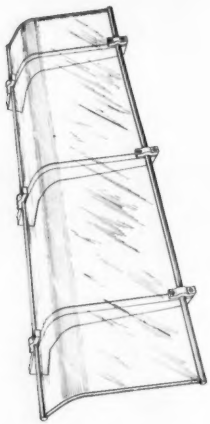


231,349
WHEEL
Frank Gaffney, West Covina, Calif., assignor to Alan Scott
Filed May 10, 1972, Ser. No. 252,146
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211

231,350
PANEL SECTION OR SIMILAR ARTICLE
Akio Ishida, Littleton, and Alan Paul Webster, Evergreen, Colo., assignors to Johns-Manville Corporation, Greenwood Village, Colo.
Filed Oct. 10, 1972, Ser. No. 296,421
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J

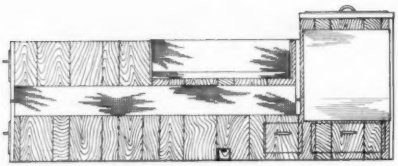


231,351
SAFETY SHIELD FOR ROVING FRAME
Frederick A. Preston, Pendleton, Paul W. Bowman, Greenville, and Albert D. Harmon, Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.
Filed Oct. 12, 1972, Ser. No. 297,132
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D19—15



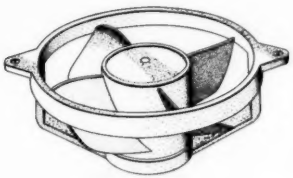
231,352
COMBINED RECEPTACLE AND COVER FOR PORTABLE TOILET
Bernard C. Sharp, White Plains, N.Y., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Sept. 26, 1972, Ser. No. 293,660
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48

231,353
UTILITY UNIT FOR CAMPERS OR THE LIKE
James C. Corbett, Salt Lake City, Utah, assignor to Kenneth D. Slabaugh
Filed Oct. 4, 1971, Ser. No. 186,587
Term of patent 14 years
Int. Cl. D23—*02*; D6—*05*
U.S. Cl. D23—50

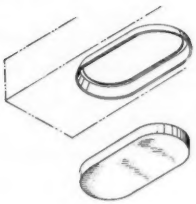


231,354
AIR CONDITIONING CABINET OR SIMILAR ARTICLE
Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 22, 1972, Ser. No. 255,940
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141

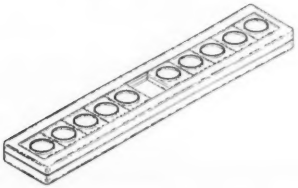
231,355
FAN
Georg Papst, St. Georgen, Black Forest, Germany, assignor to Papst Motoren, K.G., St. Georgen, Black Forest, Germany
Filed Dec. 22, 1971, Ser. No. 211,146
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—160



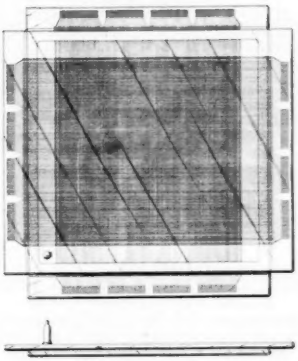
231,356
COMBINED ACCESS DOOR AND FRAME THEREFOR
John C. Kurz, Philadelphia, Pa., assignor to Advanced Air, Inc., Philadelphia, Pa.
Filed Dec. 8, 1971, Ser. No. 206,230
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



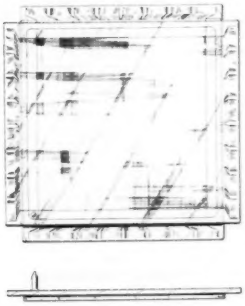
231,357
EDUCATIONAL MATHEMATICAL TOY
Michael R. Meyers, Munsey, N.Y., and Michael Langieri, Butler, N.J., assignors to Questor Corporation, Toledo, Ohio
Filed Oct. 2, 1972, Ser. No. 294,425
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



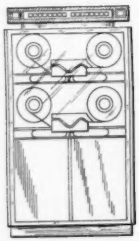
231,358
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Gerald E. Wojcik and Richard A. Martel, Toledo, Ohio, Fred E. Mansur, Temperance, Mich., and Larry J. Lohmann, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 7, 1970, Ser. No. 26,304
Term of patent 14 years
The portion of the term of the patent subsequent to Nov. 2, 1985, has been disclaimed
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



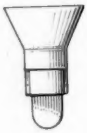
231,359
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Richard A. Martel, Toledo, Ohio, Fred E. Mansur, Temperance, Mich., and Larry J. Lohmann and Gerald E. Wojcik, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 7, 1970, Ser. No. 26,325
Term of patent 14 years
The portion of the term of the patent subsequent to Nov. 2, 1985, has been disclaimed
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



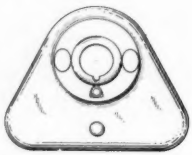
231,360
TAPE TRANSPORT
John H. Wilson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.
Filed Jan. 17, 1972, Ser. No. 218,651
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



231,361
HOLDER FOR BULB FOR USE WITH DECORATIVE LIGHT UNITS
Terry Hermanson, New York, N.Y., assignor to Mr. Christmas, Incorporated, New York, N.Y.
Filed Dec. 2, 1971, Ser. No. 204,393
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

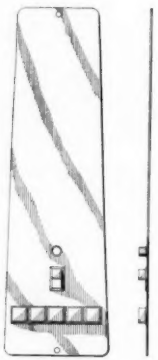


231,362
ELECTRIC SOLENOID HOUSING
Norman R. Doherty, 870 Main St., Farmingdale, N.Y. 11735
Filed June 21, 1972, Ser. No. 264,902
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

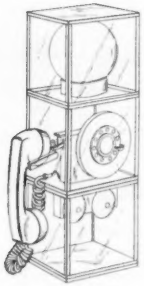


231,363
TELEPHONE HAND SET OR SIMILAR ARTICLE
Wolfgang Schmidt, Dachau, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 6, 1971, Ser. No. 131,844
Claims priority, application Germany Oct. 6, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

231,364
CONTROL PANEL FOR DATA ACCESS ACOUSTIC COUPLER
John P. Kennedy, Columbus, Ohio, assignor to Design Elements, Inc.
Filed Apr. 20, 1972, Ser. No. 246,108
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

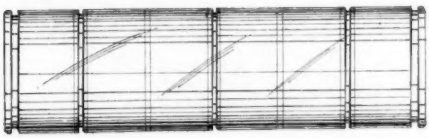


231,365
RECTANGULAR TABLE TELEPHONE
Bruce Wasserman, 326 W. 23rd St., New York, N.Y. 10011
Filed Mar. 16, 1973, Ser. No. 342,190
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

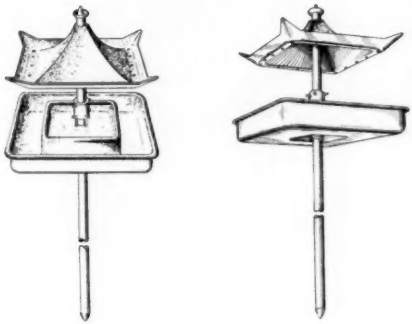


231,366
EMBLEM
Gene Mathias, Fort Worth, Tex., assignor to Plaques International Inc., doing business as P. I. Associates, and May Advertising Company, Inc., Fort Worth, Tex., fractional part interest to each
Filed May 15, 1972, Ser. No. 253,690
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D29—11 F

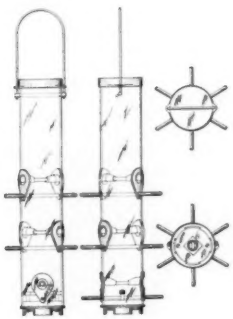
231,367
PASSAGEWAY TUBE FOR AN ANIMAL HABITAT OR SIMILAR ARTICLE
Allan H. Willinger, New Rochelle, and Albert J. Dinnerstein, Brooklyn, N.Y., assignors to Metaframe Corporation, Maywood, N.J.
Filed June 28, 1972, Ser. No. 267,150
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



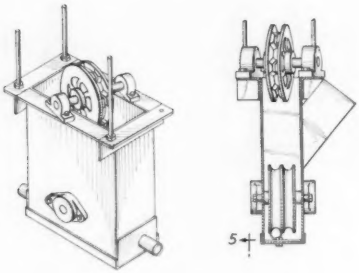
231,368
BIRD FEEDER
George F. Motter III, 3106 Lehigh St., Allentown, Pa. 18103
Filed July 3, 1972, Ser. No. 268,528
Term of patent 7 years
Int. Cl. D30—*03*
U.S. Cl. D30—14



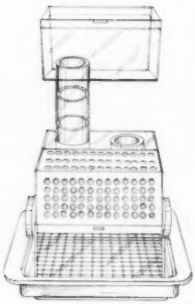
231,369
BIRD FEEDER
Peter Kilham, 25 Humphrey's Road, West Barrington, R.I. 02890
Filed July 24, 1972, Ser. No. 274,820
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—14



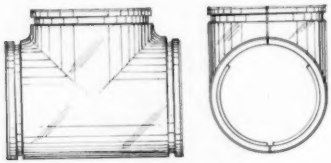
231,370
REVERSING POULTRY FEED HOPPER
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed June 26, 1972, Ser. No. 266,488
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



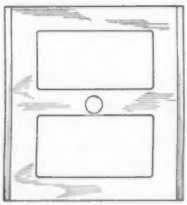
231,371
ANIMAL HABITAT MODULE
Allan H. Willinger, New Rochelle, and Jacques Le Baigue, Westbury, N.Y., assignors to Metaframe Corporation, Maywood, N.J.
Filed July 12, 1972, Ser. No. 271,024
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—42



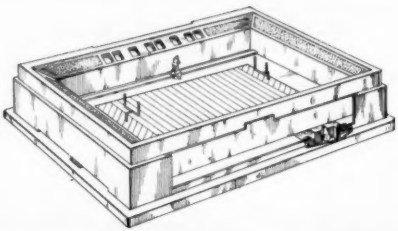
231,372
PASSAGEWAY T FOR AN ANIMAL HABITAT OR SIMILAR ARTICLE
Allan H. Willinger, New Rochelle, and Albert J. Dinnerstein, Brooklyn, N.Y., assignors to Metaframe Corporation, Maywood, N.J.
Filed July 24, 1972, Ser. No. 274,679
Term of patent 14 years
Int. Cl. D30—*07*
U.S. Cl. D30—42



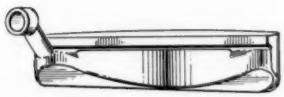
231,373
GOLF CLUB HEAD
Richard Pavelle, Tucson, Ariz.
(3 Fieldstone Drive, Woburn, Mass. 01801)
Filed Mar. 3, 1972, Ser. No. 231,787
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



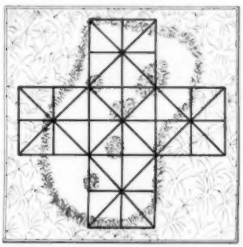
231,374
FOOTBALL GAME BOARD
Walter Moé, Huntington Station, N.Y., assignor to Aurora Products Corp., West Hempstead, N.Y.
Filed May 30, 1972, Ser. No. 258,204
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 FG



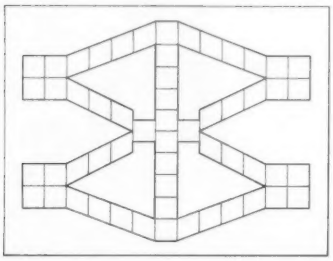
231,375
GOLF PUTTER
Karsten Solheim, 10412 N. 37th St., Phoenix, Ariz. 85028
Filed Aug. 2, 1972, Ser. No. 277,334
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



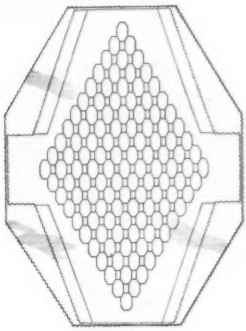
231,376
GAME BOARD
Alvie D. Nix, Horatio, Ark. 71842
Substituted for abandoned design application Ser. No. 25,086, Sept. 21, 1970. This application Jan. 23, 1973, Ser. No. 326,010
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



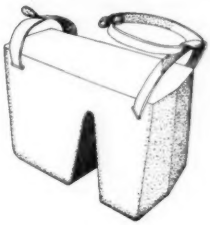
231,377
GAME BOARD
Stephen Corey, 6258 Rhoades, St. Louis, Mo. 63109
Filed Feb. 21, 1973, Ser. No. 334,451
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



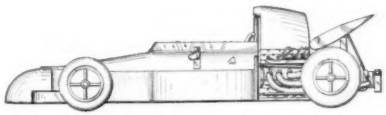
231,378
GAME BOARD
Lucille J. Carroll, Rte. 1, Box 69, Lufkin, Tex. 75901
Filed Feb. 27, 1973, Ser. No. 336,328
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



231,379
SHOE STILT
Earl C. Fields, 3660 Donegal Drive, Cincinnati, Ohio 45236
Filed Apr. 24, 1972, Ser. No. 247,242
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 E

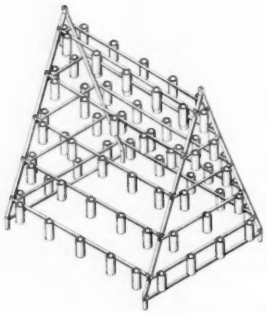


231,380
MODEL RACING CAR
Derek Gardner, West Horsley, England, assignor to Tyrell Racing Organisation Limited, Ockham, near Ripley, Surrey, England
Filed Jan. 17, 1972, Ser. No. 218,643
Claims priority, application Great Britain July 16, 1971
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



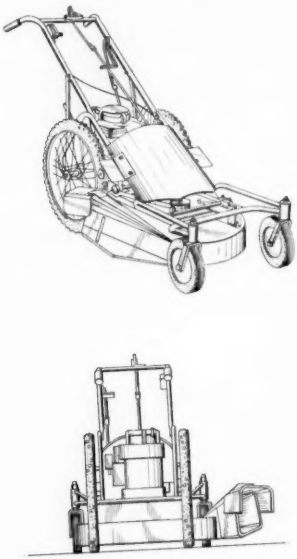
231,381
TOY XYLOPHONE
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Jan. 24, 1973, Ser. No. 326,262
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C

231,382
FLOWER DISPLAY RACK
Gideon W. Sperle, 513 6th Ave. N., Twin Falls, Idaho 83301
Filed Mar. 6, 1972, Ser. No. 232,344
Term of patent 14 years
Int. Cl. D11—*02*; D6—*09*
U.S. Cl. D35—3 R

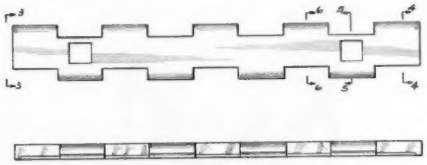


231,383
WATERING DEVICE FOR POTTED PLANTS
John E. Goldring, Pebble Beach, Calif., assignor to Agro International
Filed Mar. 8, 1972, Ser. No. 232,987
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

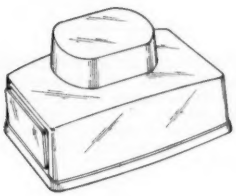
231,384
LAWN MOWER
Wayne Pontious, Bradenton, Fla., assignor to Sunshine Mower Company, Bradenton, Fla.
Filed July 30, 1973, Ser. No. 383,717
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



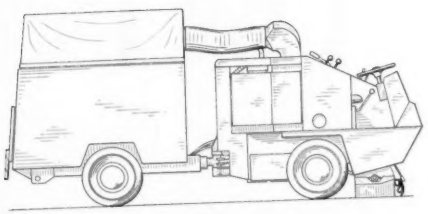
231,385
TRACK ELEMENT FOR ENDLESS TRACKS
Dominic Plastino, Montreal, Quebec, Canada, assignor to ANFA Tractor Parts Ltd., Montreal, Quebec, Canada
Filed Jan. 21, 1971, Ser. No. 108,669
Claims priority, application Canada Oct. 15, 1970
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D40—5



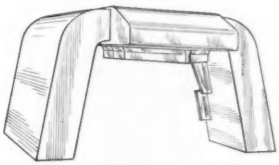
231,386
LAMP FOR MOTORCYCLE OR LIKE VEHICLE
Walter Kenneth Bryant, Solihull, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England
Filed July 21, 1972, Ser. No. 273,981
Claims priority, application Great Britain Jan. 21, 1972
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



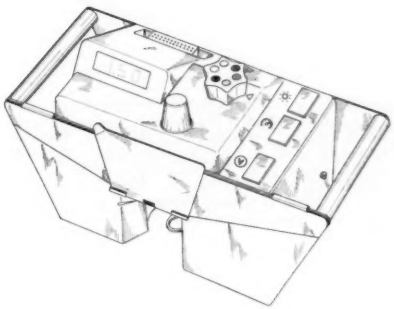
231,387
SURFACE CLEANING VEHICLE
Keith N. Krier, Minneapolis, Paul W. Kimzey, St. Louis Park, and John N. Polivka, Hopkins, Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Sept. 21, 1972, Ser. No. 290,832
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D49—9.1



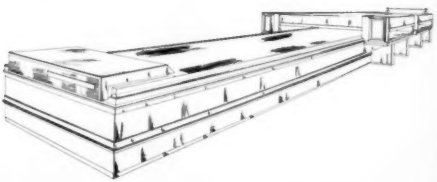
231,388
AIR DISCHARGE DRYER TUNNEL
Dean C. Rupp, Burnsville, Minn., assignor to Rupp Industries, Inc., Bloomington, Minn., and Passpoint Corporation, Maryland Heights, Mo., fractional part interest to each
Filed Feb. 1, 1972, Ser. No. 222,724
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—12



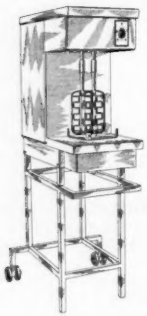
231,389
DENSITOMETER
Francesco Milani, Bellinzona, Ticino, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland
Filed Jan. 10, 1972, Ser. No. 216,875
Claims priority, application Switzerland July 21, 1971
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 R



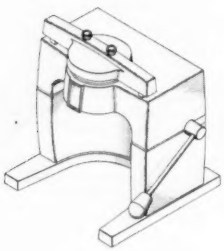
231,390
LASER MATERIAL CUTTER
Peter P. Klepa and Thomas J. Hermann, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 10, 1972, Ser. No. 216,889
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 A



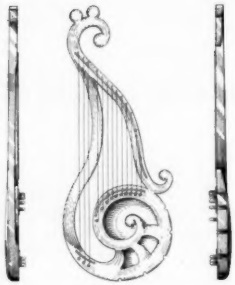
231,391
WHIP MACHINE
Bruce Carvel, Cranbury, N.J., assignor to Carvel Corporation, Yonkers, N.Y.
Filed May 23, 1972, Ser. No. 256,217
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 E



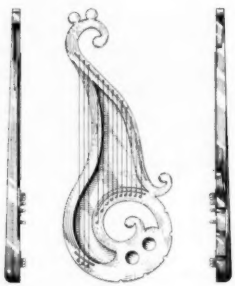
231,392
LEMON SECTIONIZER
John M. Ross, Upland, Frederick W. Riddington, Ontario, and Richard O. Spencer, South Laguna, Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.
Filed Aug. 31, 1972, Ser. No. 285,178
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 A



231,393
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed July 17, 1972, Ser. No. 272,106
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A

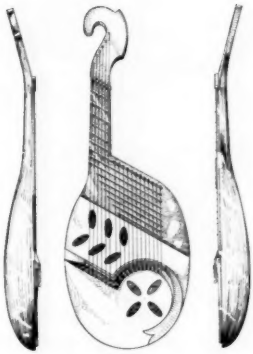


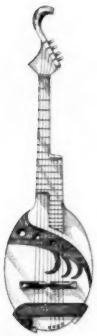
231,394
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed July 17, 1972, Ser. No. 272,107
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



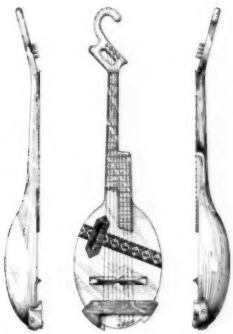
231,395
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed July 17, 1972, Ser. No. 272,108
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A

231,396
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed July 17, 1972, Ser. No. 272,109
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A





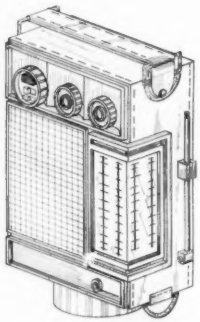
231,397
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed July 31, 1972, Ser. No. 276,355
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



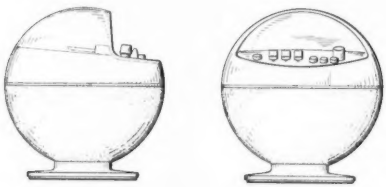
231,398
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed July 31, 1972, Ser. No. 276,356
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A

231,399
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed July 31, 1972, Ser. No. 276,357
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A

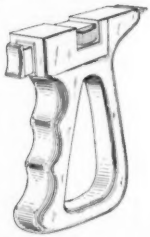
231,400
RADIO
Frank Nagabashi, Hong Kong, assignor to Windsor Industries, Inc., Plainview, N.Y.
Filed Feb. 28, 1972, Ser. No. 230,169
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



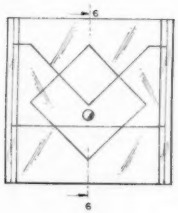
231,401
RADIO RECEIVER
Ryuzo Fujita, Tokyo, Japan, assignor to Ryujin Co., Ltd., Tokyo, Japan
Filed Apr. 17, 1972, Ser. No. 245,033
Claims priority, application Japan Nov. 9, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



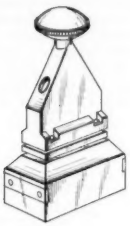
231,402
MOVIE CAMERA HANDLE OR SIMILAR ARTICLE
Robert E. Bourke, Weston, Conn., assignor to GAF Corporation, New York, N.Y.
Filed May 31, 1972, Ser. No. 258,480
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 E



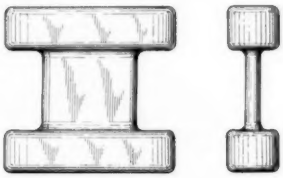
231,403
PHOTOGRAPHIC PRINT CROPPER
Mark J. Klayman, 75 Henry St., Brooklyn, N.Y. 11201
Filed July 10, 1972, Ser. No. 270,266
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 P



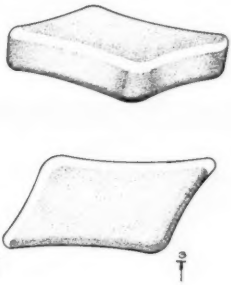
231,404
LABEL APPLICATOR
Rollin H. Sontag, Kings Point, N.Y., assignor to Joan S. Sontag, Kings Point, N.Y.
Filed Nov. 2, 1972, Ser. No. 303,267
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



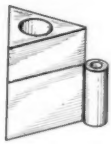
231,405
MARKER BUOY
Buyrl A. Franks, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.
Filed Oct. 20, 1971, Ser. No. 191,141
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D71—1 P



231,406
CAKE OF SOAP OR THE LIKE
Olga M. Biallo, 430 E. 56th St., New York, N.Y. 10019
Continuation of abandoned design application Ser. No. 12,889, July 25, 1968. This application Jan. 29, 1970, Ser. No. 21,176
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D73—1 A

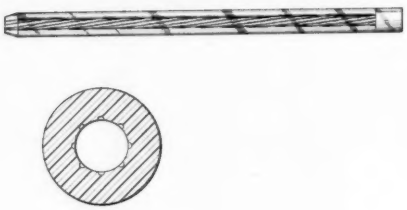


231,407
COMBINED CLIP DISPENSER AND PENCIL HOLDER
Robert M. Leedy, 7 Martindale Road, Short Hills, N.J. 07078
Filed Dec. 26, 1972, Ser. No. 317,930
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A

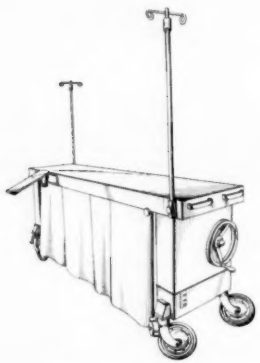


231,408
BARREL FOR A WRITING INSTRUMENT
Roy M. Jenkins, Los Angeles, Calif., assignor to Lindy Pen Company Incorporated, North Hollywood, Calif.
Filed May 14, 1970, Ser. No. 22,982
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 C

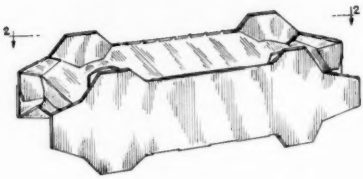
231,409
BARREL FOR A WRITING INSTRUMENT
Roy M. Jenkins, Los Angeles, Calif., assignor to Lindy Pen Company Incorporated, North Hollywood, Calif.
Filed May 14, 1970, Ser. No. 22,983
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 C



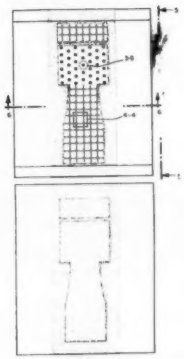
231,410
CARDIAC X-RAY TABLE
Raymon A. Prange, Falls Church, Va., assignor to Georator Corporation, Manassas, Va.
Filed Nov. 2, 1971, Ser. No. 195,067
Term of patent 14 years
Int. Cl. D24—*01;* D12—*14*
U.S. Cl. D83—1 H



231,411
COMBINED SPINDLE AND MEDICAL PACKAGE
Salustiano Segovia Mirasol, Jr., Pasadena, Calif., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 29, 1972, Ser. No. 319,804
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 B

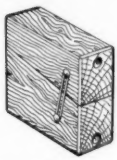


231,412
DISPOSABLE DIAPERS
Evelyn H. Krusko, Newtown Square, Pa., assignor to Scott Paper Company, Delaware County, Pa.
Original design application Aug. 2, 1971, Ser. No. 168,529. Divided and this application Mar. 19, 1973, Ser. No. 342,603
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 A

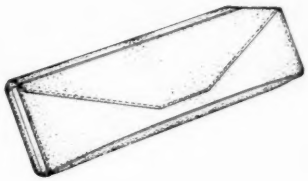


231,413
MAGNETIC CIGARETTE HOLDER
Peter Sopuch, 2815 Charter Blvd., Troy, Mich. 48084
Filed Oct. 20, 1971, Ser. No. 191,137
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 B

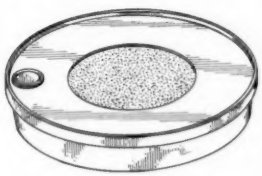
231,414
COLLAPSIBLE SMOKING PIPE
Thomas M. Bills, 8810 Littlewood Road, Baltimore, Md. 21234
Filed July 12, 1973, Ser. No. 378,495
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 A



231,415
CLUTCH-TYPE UMBRELLA CARRYING CASE
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Apr. 28, 1972, Ser. No. 248,785
Claims priority, application Germany Oct. 29, 1971
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R



231,416
PLANT POT SUPPORT AND WATER FEED DEVICE
John E. Goldring, Pebble Beach, Calif., assignor to Agro International, San Francisco, Calif.
Filed Mar. 8, 1972, Ser. No. 232,988
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



LIST OF PATENTEES

TO WHOM

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Alexandre, Pierre, to L'Oreal. Method of incorporating volatile organic substances into thermoplastic materials and articles made from the resulting compositions. 3,804,796, Cl. 260-42.430.

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Allander, Clals Gustaf. Arrangement for maintaining a ventilated zone within a part of a room partitioned by an air curtain. 3,803,995, Cl. 98-30.000.

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Auto Crane Company: *See—*
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Automatic Liquid Packaging, Inc.: *See—*
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Auxier, John A.; Perdue, Phillip T.; Shinpaugh, William H.; and Thorngate, John H., to United States of America, Atomic Energy Commission. Determination of radon in air. 3,805,070, Cl. 250-328.000.
Avco Corporation: *See—*
Karol, Joseph A., 3,803,929.
Murphy, John C., 3,805,229.
Norton, David C., 3,804,020.
Avins, Jack, to RCA Corporation. Brightness control. 3,804,981, Cl. 178-7.30r.
Avon Products, Inc.: *See—*
Gunderman, Anthony J.; and Forshay, Richard D., 3,804,604.
Azoulay, Edgar Elie Yves; and Lebeault, Jean-Michel Marie Joseph, to British Petroleum Company Limited, The. Enzymic oxidation process. 3,804,714, Cl. 195-28.00r.
Azure, Leo L., Jr., to Chatsworth Data Corporation, mesne. Automatic cleaning of fiber optics probe. 3,805,027, Cl. 234-61.00e.
Azurin, Salvador R. Automatic pistol holster. 3,804,306, Cl. 224-2.00b.
Babcock & Wilcox Company, The: *See—*
Bonzi, Stephen A., 3,804,398.
Babel, Louis; and Mola, Michel, to Societe Civile d'Etudes de Centrifugation. Continuous rotary method of casting metal utilizing a magnetic field. 3,804,147, Cl. 164-49.000.
Baeslack, Alfred J.: *See—*
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Baglai, Vitaly Mikhailovich: *See—*
Paton, Boris Evgenievich; Thedovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,804,150.
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Bagley, Rodney D., to Corning Glass Works. Method of forming an extrusion die. 3,803,951, Cl. 76-107.00r.
Bagnoli, Alvaro: *See—*
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Baier, Robert E., to Colspan Corporation. Process of dewatering sewage sludge and converting the same to a useable product. 3,804,753, Cl. 210-21.000.
Bailey, Floyd Leroy: *See—*
Feigin, Abner Oscar; Bailey, Floyd Leroy; and Smith, Russell Yerby, Jr., 3,803,753.
Bailey, Peter John Dennis, to Irvin Great Britain Limited. Ratchet tensioners. 3,804,368, Cl. 254-51.000.
Baker, Alan Stuart: *See—*
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Baker, C. Mark, to Hewlett-Packerd Company. Scanning light emitting diode display of digital information. 3,805,255, Cl. 340-172.500.
Baker, Donald J.; Gartner, Stanley J.; and Oberg, Robert S., to Sylvania Electric Products Inc. Machine for making through connection in printed circuit board. 3,803,697, Cl. 29-203.00b.
Baker Oil Tools, Inc.: *See—*
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Baker Perkins, Inc.: *See—*
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Bakule, Ronald D.; Gill, Robert A.; and Emmons, William D., to Rohm & Haas Company. Electroconductive paper. 3,804,668, Cl. 117-201.000.
Bakumenko, Ljdmila Alexandrovna: *See—*
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Baldwin, Darwin Clark, Jr. Stockpile reclaiming apparatus. 3,804,229, Cl. 198-36.000.
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Baldwin, Mart G.; and Gehlhaus, Paul H., to United States of America, Army, mesne. High energy, low burning rate solid propellant compositions based on acrylic prepolymer binders. 3,804,683, Cl. 149-19.500.
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Ballew, Julius R. Retrievable earth anchor. 3,803,782, Cl. 52-161.000.
Ballew, Julius R. Foundation earth anchor. 3,803,783, Cl. 52-161.000.
Balocca, Alfred Edward; Brincks, Richard Joseph; and Scott, James Edwin, Jr., to American Can Company. End closure for an easy opening resealable container. 3,804,287, Cl. 220-27.000.
Baltimroe Aircoil Company, Inc., mesne: *See—*
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Barber-Greene Company: *See—*
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Barham, Peter James: *See—*
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Barnaby, Bernard Sydney; and Coe, Cyril Walter, to General Electric Company Limited, The. Matrix printer. 3,804,224, Cl. 197-1.00r.
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Barnes Drill Company: *See—*
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Barnett, Stanley; and Mak, Tyrone T., to General Foods Corporation. Preparation of extract for freeze drying. 3,804,960, Cl. 426-384.000.
Barowtiz, Peter Jack. Automatic intruder alarm. 3,805,260, Cl. 340-258.00b.
Barrett, Austin, to Evans, W. P., & Sons, Ltd. Mechanically actuated self-lubricated roll. 3,804,473, Cl. 308-107.000.
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K., and Wilms, Carl A., to Jackson, Byron, Inc. Marine platform structure. 3,804,268, Cl. 214-14.000.
Barrot, Jean-Pierre; Jaussein, Christian; and Yastroubinski, Andre, to Commissariat a l'Energie Atomique. Device for storing the amplitude of an electric signal. 3,805,172, Cl. 328-151.000.
Barry, Thomas Ian: *See—*
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Barry, Vincent T., to Carrier Corporation. Start winding protection device. 3,803,866, Cl. 62-230.000.
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Alexandr Emelyanovich; Nikolaenko, Evgeny Gritorievich; Sepanov, Grigory Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich. Plant for producing sheet metal blanks from liquid metal. 3,804,151, Cl. 164-263.000.
Barth, Warren W. Insect control device. 3,803,801, Cl. 54-81.000.
Barthel, Rold; and Offermann, Bernd-Peter, to Licentia Patent-Verwaltungs-G.m.b. H. Collimator for high energy radiation. 3,805,081, Cl. 250-512.000.
Bartlett-Collins Company: *See—*
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Bassett, David Robinson; and Hoy, Kenneth Look, to Union Carbide Corporation. Polymerization using varying monomer concentration. 3,804,881, Cl. 260-47.0ua.
Bates, Emile Bernard. Thermal treatment of textiles. 3,805,020, Cl. 219-496.000.
Batesville Casket Company, Inc.: *See—*
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Battail, Gerard, to Thomson-CSF. Decoding device of the weighting and feed-back type. 3,805,236, Cl. 340-146.1aq.
Baucom, Larry H. Pallet and pallet leg. 3,804,032, Cl. 108-51.000.
Baughn, James W.; Monroe, George A.; and Ronsse, August J., to Itek Corporation. Measurement of radiation configuration factor. 3,804,527, Cl. 356-157.000.
Bausch & Lamb, Incorporated: *See—*
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Baxter Laboratories, Inc.: *See—*
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Bayer Aktiengesellschaft: *See—*
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Bayha, Wolf; and Grozinger, Walter, to Moto Meter GmbH, mesne. Apparatus for sensing speed. 3,805,161, Cl. 324-161.000.

Bazille, James H., Jr., to Minnesota Mining and Manufacturing Company. Solderless wire connector. 3,804,971, Cl. 174-88.00r.

Beall, Glenn Lee: *See—*
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Bearfield, Clair A.: *See—*
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Beauford, Martin Henry: *See—*
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Becker, James R.; and Furlow, Richard H. Aerosol fire extinguisher and method. 3,804,759, Cl. 252-8.000.

Becker, Kurt, to Heye, Hermann. Press and blow machine for the production of containers. 3,803,877, Cl. 65-241.000.

Becker, Larry T.: *See—*
Nyman, Bengt E.; and Becker, Larry T., 3,803,843.

Becker, Otto Alfred. Composite wall element for thermal and acoustic insulation. 3,803,784, Cl. 52-173.000.

Becker, Otto Alfred. Electrical resistance welding of coated sheet metals. 3,805,013, Cl. 219-92.000.

Becker, Otto Alfred. Resistance welding. 3,805,014, Cl. 219-92.000.

Beckett, Earl D. W. Decorative back-lighted slide viewing frame. 3,803,737, Cl. 40-106.100.

Beckr, Leo, to International Standard Electric Corporation. Arrangement for suppressing overshoot caused by level regulation in carrier-frequency system. 3,804,995, Cl. 179-170.000.

Beehler, Vernon D.: *See—*
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Behner, Otto; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Aryliminothiazolidines. 3,804,848, Cl. 260-306.700.

Belgorodsky, Izrail Markovich: *See—*
Liakumovich, Alexandr Grigorievich; Linkov, Alexei Dmitrievich; Rutman, Grigory Iosifovich; Michurov, Jury Ivanovich; Belgorodsky, Izrail Markovich; Sire, Efim Moiseevich; and Pantukh, Boris Izrailevich, 3,804,911.

Bell and Howell Company: *See—*
Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,804,501.
Woodier, James G., 3,804,502.

Bell, Oliver A., Jr.; and Gilleland, Randall C., to Colt Industries Operating Corporation. Electrical discharge machining power supply with protective system for output switch failure. 3,805,012, Cl. 219-69.00s.

Bell Telephone Laboratories, Incorporated: *See—*
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Clary, James Barney, 3,805,043.
Gewartowski, James Walter; and Tatsuguchi, Isamu, 3,805,198.
Hammond, Ronald Wayne; Morris, Robert; Powondra, Richard Joseph; and Ross, Alexander Robert, 3,804,991.
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Beller, Hans Albert; and Burgdorf, Jochen, to ITT Industries, Inc. Spot-type disc brake. 3,804,215, Cl. 188-73.400.

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Beltz, Richard K.; and Hurst, Jerry C., to Western Electric Company, Incorporated. Test probe for integrated circuit chips. 3,803,709, Cl. 29-624.000.

Bemel, Milton M., 5% to Lindsley, Warren F. B. Shopping bag with detachable coupon. 3,804,323, Cl. 229-53.000.

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Benderovsky, Valdimir Valerianovich; Yastrebov, Igor Alexandrovich; Schepotiev, Alexandr Ivanovich; Korneichuk, Viktor Mikhailovich; Vergiliev, Oleg Mikhailovich; and Lysenko, Alexei Petrovich. Mechanism for transportation of an information carrier. 3,804,52, Cl. 242-201.000.

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Fallon, Herbert J.; and Garnett, Jack L., 3,803,769.
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Hoffman, Gary Robert, 3,805,165.
Michaud, Jimmie A.; and Stroman, Jack R., 3,804,270.
Michaud, Jimmie A.; and Stroman, Jack R., 3,805,036.
Root, Floyd A.; and White, Robert C., 3,803,875.
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Bennett, Robert Neil; and Richards, David, to British Petroleum Company Limited, The. Production of lubricating oils. 3,804,742, Cl. 208-111.000.

Bennett, Robert R., to Westinghouse Electric Corporation. Steam generator. 3,804,069, Cl. 122-34.000.

Bennington, William E. Dental floss dispenser. 3,804,102, Cl. 132-92.00r.

Bennion, Douglas N.; and Newman, John S., to University of California, The Regents of the. Method and apparatus for the electrochemical removal of metal ions. 3,804,733, Cl. 204-151.000.

Bensinger, Wolf-Dieter, to Daimler-Benz Aktiengesellschaft. Oilshield arrangement for rotary piston engine. 3,804,560, Cl. 418-91.000.

Benson, Robert W.; Pearsall, Samuel H.; and Reed, Robert G., to Cutters Machine Company, Inc. Needle positioner for a sewing machine. 3,804,043, Cl. 112-219.00a.

Bentley, Arthur P. Surface operated single tube pump. 3,804,557, Cl. 417-402.000.

Bentley, Kenneth Walter; and Rushworth, William Ian, to Reckitt & Colman Products Limited. Substituted phenyl sulphoxides and sulphones and the use thereof as vasodilators. 3,804,904, Cl. 260-607.00a.

Bentz, Alan P.; and Scarpellino, Richard, to General Foods Corporation. Flavoring materials and method of preparing the same. 3,804,953, Cl. 426-221.000.

Benuit, Roland A., to Interroyal Corporation. Convertible sleep lounge. 3,803,643, Cl. 5-18.000.

Berg Electronic, Inc.: *See—*
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Bergeron, Grafton L., to Dow Chemical Company, The. Electrolytic cell including arrays of tubular anode and diaphragm covered tubular cathode members. 3,804,739, Cl. 204-266.000.

Bergin, Michael J., to Intaglio Service Corporation. Methods of producing halftone positive films. 3,804,622, Cl. 96-38.000.

Bergna, Horacio Enrique, to Du Pont de Nemours, E. I., and Company. Thermoplastic composites with low alkali glass fillers. 3,804,802, Cl. 260-42.160.

Bergsma, Rudolph: *See—*
Martin, Frank J.; Eshelman, Robert W.; and Bergsma, Rudolph, 3,804,109.

Bergstrom, Sun; and Sjovall, Jan. PGF3β. 3,804,880, Cl. 260-468.00d.

Bergstrom, Sune; and Sjovall, Jan. PGF3α. 3,804,879, Cl. 260-468.00d.

Bergwerksverband GmbH: *See—*
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Schroter, Hans-Jurgen; Juntgen, Harald; Zundorf, Dieter; and Knoblauch, Karl, 3,803,802.

Berlin, German Semenovich; Potapov, Nikolai Akimovich; and Shenker, Dmitry Dmitrievich. Photoelectric device for generating and filtering low-frequency harmonic oscillations. 3,805,190, Cl. 331-116.00m.

Bernath, Oskar, to Fischer, George, AG. Filling thread stop motion device for a shuttleless weaving machine. 3,804,129, Cl. 139-370.000.

Berner, Roland A.: *See—*
Lorenc, Walter F.; and Berner, Roland A., 3,804,770.

Berney, Jean-Claude, to Golay, Bernard, S.A. Oscillation maintenance method for mechanical resonator and related apparatus. 3,805,179, Cl. 331-1.00a.

Bernstein, Jack; and Sowinski, Francis Alexander, to Squibb, E. R., & Sons, Inc. 3-(4-(3-Hydroxy-2,4,6-triiodophenoxy)-phenyl) alanine. 3,804,894, Cl. 260-519.000.

Bertin & Cie: *See—*
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Best, John S., to Dow Chemical Company, The. Trafficked surfaces. 3,804,543, Cl. 404-28.000.

Best, Maurice Philip: *See—*
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Bethlehem Steel Corporation: *See—*
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Betker, Alexander: *See—*
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Betts, James F.; Fotland, Richard A.; and Petro, Victor P., to Horizons Incorporated. Inks with fluoresce when exposed to near or middle ultra violet radiation. 3,804,774, Cl. 252-301.20r.

Beutler, Wolfgang. Container for transport of mastic asphalt and like bulk material required for laying streets. 3,804,380, Cl. 259-157.000.

Bey, Paul P.: *See—*
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Bezrodny, Konstantin Nikolaevich; and Voit, Vladimir Nikolaevich. Apparatus for regulating pressure inside an autoclave. 3,804,591, Cl. 21-91.000.

Bhattacharyya, Ranendra K.; Fiore, Angelo Ralph, Jr.; and Rudd, David William, to Western Electric Company, Incorporated. Computerized process control system for the growth of synthetic quartz crystals. 3,805,044, Cl. 235-151.120.

Bianchi, Ralph A.: *See—*

Farrell, James H.; Bianchi, Ralph A.; and Johanson, Edward E., 3,804,251.

Bickel, Hans; and Mueller, Johannes, to Ciba-Geigy Corporation. Derivatives of 3-heterocyclmercaptomethyl 1-aminocephalosporanic acids. 3,804,832, Cl. 260-243.00c.

Bickerdike, Robert Lewis; and Mair, William Norman, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Processes for the production of alloys. 3,804,662, Cl. 117-71.00r.

Bidick, Ward F., to Koppers Company, Inc. Divided collecting main for coke oven. 3,804,721, Cl. 202-256.000.

Bielecke, Friedrich Wilhelm: *See—*
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Bielfeldt, Bernd Friedrich; and Richardsen, Richard Flohrs, to Krauss-Maffei Aktiengesellschaft. Screw-type injector for molding machine. 3,804,381, Cl. 259-191.000.

Bigelow, John H., to Du Pont De Nemours, E. I., and Company. Metalloboranes as fogging agents in direct positive emulsions. 3,804,632, Cl. 96-108.000.

Bildplatten, Ted, Aktiengesellschaft: *See—*
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Billman, Luke N. Lifting handles for beer barrel. 3,804,290, Cl. 220-72.000.

Bilz, William F., to North Pacific Canners & Packers, Inc. Injection blanching apparatus. 3,804,000, Cl. 99-533.000.

Birchall, James Derek; and Cassidy, John Edward, to Imperial Chemical Industries Limited. Graphite compositions. 3,804,648, Cl. 106-56.000.

Birkin, Michael S., to British Railways Board. Vehicle program control system. 3,805,056, Cl. 246-187.00b.

Black and Decker Manufacturing Company, The: *See—*
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Black, Charles R. Laminate cutter. 3,803,968, Cl. 83-620.000.

Blair, Boyd C., to Brackett Stripping Machine Co., Inc. Binding apparatus. 3,804,694, Cl. 156-477.00b.

Blanchini, Vasco; and Masoni, Pietro. Variable-speed transmission devices. 3,803,931, Cl. 74-117.000.

Blaschke, Felix, to Siemens Aktiengesellschaft. Apparatus for field-oriented control or regulation of asynchronous machines. 3,805,135, Cl. 318-223.000.

Bleha, William P., Jr.: *See—*
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Bleibtreu, Alexander: *See—*
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Bleibtreu, Alexander. Means for separating the body of oil of a transformer and the body of oil of a tap-changing switch. 3,805,205, Cl. 336-94.000.

Blessings Corporation: *See—*
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Block, Myron J. Method of removing unsaturated or aromatic hydrocarbons from gases. 3,804,943, Cl. 423-245.000.

Blomqvist, Nils Verner: *See—*
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Bloom Engineering Co., Inc.: *See—*
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Blough, Jacob M., Jr., to Ametek, Inc. Pressure gauge assembly. 3,803,918, Cl. 73-420.000.

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Blume, Peter, to U.S. Philips Corporation. Spring-driven printing hammer arrangement. 3,804,009, Cl. 101-93.00c.

Bock, Burkhard: *See—*
Schmalfeld, Paul; Bock, Burkhard; and Schilling, Hans-Dieter, 3,804,581.

Bock, Rudolf; and Wagner, Gerhard, to Siemens Aktiengesellschaft. Inquiry-reply system in particular secondary radar device. 3,805,264, Cl. 343-6.50r.

Bockstie, Lawrence G., Jr., to Corning Glass Works. Flame-resistant resistor coatings. 3,804,669, Cl. 117-218.000.

Bodde, Egbert J. Spare tire mounting assembly. 3,804,308, Cl. 224-42.060.

Boden, Robert C.; and Wade, Forrest L., to International Business Machines Corporation. Self-checked single bit change register. 3,805,040, Cl. 235-153.0ap.

Boehringer Ingelheim GmbH: *See—*
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Losel, Walter; Merz, Herbert; Hoefke, Wolfgang; and Traunecker, Werner, 3,804,825.
Mentrup, Anton; Schromm, Kurt; Thoma, Otto; and Zeile, Karl, 3,804,834.
Stahle, Helmut; Koppe, Herbert; Summer, Werner; and Hoefke, Wolfgang, 3,804,833.

Boehringer Mannheim GmbH: *See—*
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Boerner, Gerhard, to Bosch, Robert, Photokino GmbH. Exposure control system for photographic apparatus. 3,805,280, Cl. 354-43.000.

Bognar, James A., to Oglebay Norton Company. Insulating compositions and structures formed therefrom for use in hot topping comprising fibrous wollastonite. 3,804,701, Cl. 160-165.000.

Bogner, Gunther: *See—*
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Bohm, Wolfgang: *See—*
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Bohn Benton Inc.: *See—*
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Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, 3,804,022.

Boiko, Georgy Alexandrovich: *See—*
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Boisvert, Conrad J., Jr., to Cogar Corporation. Apparatus and method for determining partial memory chip catagories. 3,805,243, Cl. 340-172.500.

Bolger, Justin C.; and Molvar, Henry E., Jr., to Canadian Copper Refiners Limited. Production of blanks used in the electrodeposition of strippable metal coatings. 3,804,724, Cl. 204-12.000.

Bollinger, Frederic Gerald: *See—*
D'Amico, John Joseph; and Bollinger, Frederic Gerald, 3,804,853.

Bollyky, Laszlo Joseph: *See—*
Rauhut, Michael McKay; and Bollyky, Laszlo Joseph, 3,804,891.

Bombich, Norbert S., to Ajax Magnetheromic Corporation. By-pass valve for a gas dryer. 3,803,724, Cl. 34-80.000.

Bomco, Incorporated: *See—*
Banks, Neill K., Jr., 3,804,045.

Bond, Morton K.: *See—*
Sennet, Morgan B.; and Bond, Morton K., 3,804,565.

Bondarenko, Oleg Petrovich: *See—*
Paton, Boris Evgenievich; Thedovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,804,150.

Boney, William A., to I-T-E Imperial Corporation. Collapsible switch and rack. 3,805,118, Cl. 317-103.000.

Bongiovanni, Nicholas J., to Wopo's Italian Frozen Food Products, Inc. Method of preparation of pizza product. 3,804,956, Cl. 426-344.000.

Bonzi, Stephen A., to Babcock & Wilcox Company, The. Pallet clamp. 3,804,398, Cl. 269-218.000.

Booth, Dennis: *See—*
Laidler, Thomas Gordon; and Booth, Dennis, 3,804,652.

Booy, Max Lorenz, to Du Pont de Nemours, E. I., and Company. Shaft seal throttle bushing. 3,804,423, Cl. 277-1.000.

Borck, Joachim: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,804,839.

Borden, Inc.: *See—*
Summin, Alfred S.; Daun, Henryk; Gilbert, Seymour G.; and Henig, Yair, 3,804,961.

Borg-Warner Corporation: *See—*
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Cooper, Kenneth W., 3,803,864.
Cummings, Gordon F., III, 3,804,219.
Jednacz, Thomas C.; and Norbeck, Dean K., 3,803,863.
Kuus, Felix, 3,803,853.
Miller, Robert C.; and Miller, Carl K., 3,804,115.
Newton, Alwin B., 3,803,865.

Boride Products, Inc.: *See—*
Stiglich, Jacob J., Jr., 3,804,034.

Borisov, Kostantin Grigonievich; Kuzemko, Vitaly Stepanovich; Sitnikov, Leonid Semenovich; Tokovenko, Stepan Emelyanovich; and Utyakov, Lev Lazarevich. Digital counter. 3,805,029, Cl. 235-92.0ea.

Borsuk, Pavel Afanasievich: *See—*
Lyass, Abram Moiseevich; Borsuk, Pavel Afanasievich; Usubov, Zokhrab Gamid Ogly; Kuznetsov, Viktor Georgievich; Kagan, Naum Yakovlevich; Razumeev, Jury Alexeevich; Bortnik, Vladimir Mironovich; and Korenbljum, Isai Volfovich, 3,804,641.

Bortnik, Vladimir Mironovich: *See—*
Lyass, Abram Moiseevich; Borsuk, Pavel Afanasievich; Usubov, Zokhrab Gamid Ogly; Kuznetsov, Viktor Georgievich; Kagan, Naum Yakovlevich; Razumeev, Jury Alexeevich; Bortnik, Vladimir Mironovich; and Korenbljum, Isai Volfovich, 3,804,641.

Bosch, Robert, G.m.b.H.: *See—*
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Bosch, Robert, Photokino GmbH: *See—*
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Bosley, Denis V.: *See—*
Chang, Richard S.; Bosley, Denis V.; and Roessler, Manfred, 3,803,758.

Bossaert, Jean; Delorme, Jean; and Ernvein, Joel. Acoustic holography system. 3,805,225, Cl. 340-5.00h.

Bosshard, Fritz, to Martini Buchbindercimaschinenfabrik A.G. Method of controlling operations of a book binding machine. 3,804,404, Cl. 271-259.000.

Bosshardt, William, to Bohn Benton Inc. Ink supply with motion accumulator for stencil duplicator. 3,804,012, Cl. 101-122.000.

Botko, Georgy Alexandrovich: *See—*
Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Botko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Popov, Lev Vasilievich; Anisiferov, Stanislav Stepanovich; and Kulikov, Anatoly Petrovich, 3,804,149.

Bowden, Roy Dennis; and Seaton, Thomas, to Imperial Chemical Industries Limited. Manufacture of halogenated pyridine derivatives. 3,804,840, Cl. 260-290.ohl.

Box Innards, Inc.: *See—*
Peters, Charles L., Jr., 3,803,946.

Boyajian, Alfred Z., to Boyan, Limited. Drill guide. 3,804,546, Cl. 408-115.000.

Boyan, Limited: *See—*
Boyajian, Alfred Z., 3,804,546.

Boyd, David C., to Corning Glass Works. Faceplate for television picture tube. 3,805,107, Cl. 313-96.000.

Boyd, Stan Lee. Golfer's training device. 3,804,420, Cl. 273-183.00b.

Boyle, John A., to Lee, Raymond, Organization Inc., The. Safety device for automobiles: glare shield. 3,804,456, Cl. 296-97.00e.

Boyum, Norman B. Sinker device. 3,803,749, Cl. 43-44.900.

Brachman, Armand E., to GAF Corporation. Polyurethane compositions having improved hydrolytic stability. 3,804,809, Cl. 260-75.0nk.

Brackett Stripping Machine Co., Inc.: *See—*
Blair, Boyd C., 3,804,694.

Bradley, William H.: *See—*
McConnell, William M.; Bradley, William H.; Chappell, Howard E.; and Carey, Raymond L., 3,803,901.

Bradley, William S.; and Hardy, William C., to Sun Oil Company (Delaware). Catalytic wellbore heater. 3,804,163, Cl. 166-59.000.

Bradley, Wilson E., Jr.: *See—*
Engalitcheff, John, Jr.; Facius, Thomas F.; and Bradley, Wilson E., Jr., 3,804,389.

Brady, Cyrus T.; Duffield, Peter L.; and Houser, Philip H., to Mead Corporation, The. Yoke mounted jet drop recording head. 3,805,273, Cl. 346-75.000.

Brake, William E.: *See—*
Jouhal, Teja S.; and Brake, William E., 3,803,969.

Brandel, Klaus: *See—*
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Brashers, Leroy C., Jr.: *See—*
Stonebraker, William J.; and Brashers, Leroy C., Jr., 3,804,207.

Bratke, Dieter N.; and Brandel, Klaus, to General Motors Corporation. Deformable support for steering assembly. 3,803,938, Cl. 74-492.000.

Bratt, Richard W.; and Steven, Gary, to Crucible Inc. Method of fabricating a composite steel article. 3,803,702, Cl. 29-420.500.

Braunberger, Benjamin A.; and Burrough, Donald E., to Gehl Company. Drive mechanism for forage wagon. 3,804,279, Cl. 214-519.000.

Brazan, Harry J. Tractor carried, dry cane leaves burner positioner and method of use. 3,804,078, Cl. 126-271.200.

Brecher, Lee E.: *See—*
Archer, David H.; and Brecher, Lee E., 3,804,606.

Bredemeier, Herbert C. Laser beam instrument for uterine cervical ionizations. 3,804,095, Cl. 128-303.100.

Brennan, George A., to Challenge-Cook Bros., Incorporated. Apparatus for processing porous and absorbent sheet material in bulk. 3,803,882, Cl. 68-208.000.

Brennesholtz, Aaron House, to Du Pont de Nemours, E.I., and Company, Switch. 3,805,048, Cl. 240-8.160.

Bresnick, Stuart D., to United Nuclear Corporation. Nuclear reactor fuel element. 3,804,710, Cl. 176-79.000.

Breuer, Wolfgang; and Bleibtreu, Alexander, to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G. Tap-changing transfer switch having series breaks and means for controlling the recovery voltage between breaks. 3,805,087, Cl. 307-136.000.

Brewington, Harrel B.: *See—*
Fischer, Carl E.; Delmastro, Albino F.; Burdge, Thomas S.; Brewington, Harrel B.; Harris, John B.; and Zaremba, Joseph, 3,804,187.

Bridge Data Products Corporation: *See—*
Davis, Cecil J., 3,804,313.

Bridgeport Machines, Inc.: *See—*
Lawler, Martin David, 3,803,927.

Bridgman, Henry. Vacuum cannula apparatus. 3,804,089, Cl. 128-276.000.

Bright, Edward J., to Bendix Corporation, The. Contact removal bushing for electrical connector. 3,805,219, Cl. 339-217.00s.

Brincks, Richard Joseph: *See—*
Balocca, Alfred Edward; Brincks, Richard Joseph; and Scott, James Edwin, Jr., 3,804,287.

Brinzei, Adrian; and Mezincescu, Mihai, to Institutul de Cercetare Si Proiectare Technologica Pentru Prelucrarea Titeiului. Tray with self-guiding target valves for gas-liquid and vapor-liquid contacting. 3,804,387, Cl. 261-79.00a.

British Iron and Steel Research Association, The: *See—*
Hoyle, Geoffrey, 3,804,146.
Oxlade, Roy R., 3,803,683.

British Oxygen Company Limited, The: *See—*
Kugler, Simon; and Bruzzi, Stefano, 3,804,162.

British Petroleum Company Limited, The: *See—*
Azoulay, Edgar Elie Yves; and Lebeault, Jean-Michel Marie Joseph, 3,804,714.
Bennett, Robert Neil; and Richards, David, 3,804,742.

British Railways Board: *See—*
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British Screw Company, Limited, The, mesne: *See—*
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British Steel Corporation: *See—*
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British Steel Corporation, mesne: *See—*
Laws, William Robert; Townsend, Nicholas Arthur; and Barham, Peter James, 3,804,339.

British Titan Limited: *See—*
Hinley, John James; Milne, David Graeme; and Goldsbrough, Keith, 3,804,655.

Britt, Pope Patterson, to General Electric Company. Antenna-polarization means. 3,805,268, Cl. 343-756.000.

Brockhouse Engineering Limited: *See—*
Gatiss, Albert Leslie, 3,803,844.

Broderick, Frank W., to Johnson & Johnson. Method of manufacturing fully furnace hardened mated steel embossing rolls. 3,803,684, Cl. 29-148.40d.

Brokaw, Adrian F.: *See—*
Arciprete, Cenio R.; Brokaw, Adrian F.; Dumais, Richard E.; and Stucchi, Richard F., 3,804,007.

Bronswerk-Apparatenbau N.V. v/h Moring & Steenaart: *See—*
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Brooks, Everett G.; Heise, Nyles N.; Lewis, David O.; Podler, Glenn D.; and Zimmerman, Dean O., to International Business Machines Corporation. I/O device attachment for a computer. 3,805,245, Cl. 340-172.500.

Brosens, Pierre J.: *See—*
Searight, Edward F.; and Brosens, Pierre J., 3,804,159.

Brotherton, Richard M.: *See—*
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Brown Boveri & Company Limited: *See—*
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Brown, Daniel W.: *See—*
Wall, Leo A.; and Brown, Daniel W., 3,804,817.

Brown, Frederick W., to Texas Instruments Incorporated. Data communication system for serially transferring data between a first and a second location. 3,804,982, Cl. 178-69.50r.

Brown, James C.: *See—*
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Brown, Kenneth H.: *See—*
Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,804,735.

Brown, Thomas E.; Brotherton, Richard M.; and Shive, Howard J., to Rubbermaid Industrial Products Corporation. Waste receptacle and dumping mechanism therefor. 3,804,277, Cl. 214-302.000.

Browne, Sidney, to Carrier Telephone Corporation of America, Inc. Carrier system for effecient connection of telephone subscribers to central office. 3,804,988, Cl. 179-15.0fs.

Broxholm, Thomas M.: *See—*
Elmore, Lester C.; and Broxholm, Thomas M., 3,803,975.

Broxterman, William E.; Schmidt, Donald L.; and Evani, Syamalarao, to Dow Chemical Company, The. Coating compositions comprising cyclic sulfonium zwitterions with carboxy containing polymers. 3,804,797, Cl. 260-29.620.

Brucher, Rudolf; and Gemein, Rudolf. Radial bearing with adjustable shaft support. 3,804,475, Cl. 308-122.000.

Bruke, Thomas P. Snow broom. 3,804,451, Cl. 294-54.000.

Brumheller, Ronald L., to Eastech, Inc. Signal frequency detection circuit. 3,805,171, Cl. 328-140.000.

Brunswick Corporation: *See—*
Conklin, Robert M., 3,804,617.
Morgan, Edward J., 3,804,114.

Bruzzi, Stefano: *See—*
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Bryant, Frank Allan, to Offshore Company, The. Method and apparatus for damping wave action. 3,803,849, Cl. 61-1.00r.

Bubik, Leslie, to Vulcan Equipment Company Ltd. Ramp hoist. 3,804,206, Cl. 187-8.520.

Buchholz, Bernard, to Pennwalt Corporation. Encapped polymeric tin mercaptides for stabilizing polyvinyl chloride. 3,804,871, Cl. 260-429.700.

Buck, Larry R.: *See—*
Buck, Raymond A.; and Buck, Larry R., 3,803,790.

Buck, Raymond A.; and Buck, Larry R. Building panel structure. 3,803,790, Cl. 52-473.000.

Buckner, Dean A.; and Wilcox, Paul D., to United States of America, Atomic Energy Commission. Adjusting ferroelectric ceramic characteristics during formation thereof. 3,804,765, Cl. 252-62.900.

Buckwalter, Geoffrey R., to Cities Service Company. Fast drying, solvent free, peroxydiphosphate catalyzed printing ink vehicle. 3,804,640, Cl. 106-27.000.

Budd, Walter J.: *See—*
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Buderus'sche Eisenwerke AG: *See—*
Hubert, Helmut; Jung, Anton Ladislaus; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Burbach, Gerhard Schmidt, 3,804,548.

Buedel, Charles K.; and Caputo, James P., to GTE Sutomatic Electrical Laboratories Incorporated. Data handling system maintenance arrangement for processing system fault conditions. 3,805,038, Cl. 235-153.0ak.

Buezis, John D.; and Mucciante, Louis L., to Honeywell Inc. Combined rotary, safety and ignitor gas valves. 3,804,106, Cl. 137-66.000.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Zorayan, Vahan, 3,804,586.

Buhrer, Rudolf: *See—*
Finsterwalder, Ulrich; Finsterwalder, Klemens; and Buhrer, Rudolf, 3,803,785.

Bulatov, Alexandr Alexandrovich; and Chesnokov, Albert Ivanovich. Bedplate with drive mechanism for installing process units of automatic processing line. 3,803,944, Cl. 74-665.00f.

Bulova Watch Company, Inc.: *See—*
Carpenter, John J.; and Spreckels, Charles C., 3,805,098.

Bundi, Herman H. Apparatus for constructing scaffolds. 3,804,199, Cl. 182-82.000.

Bundy, Gordon L., to Upjohn Company, The. 15-Methyl and 15-ethyl 15(R) PGE_2. 3,804,889, Cl. 260-514.00d.

Bundy, Gordon L., to Upjohn Company, The. 15-Methyl and ethyl-15(R)-$PGF_{2\alpha}$. 3,804,890, Cl. 260-514.00d.

Bunker Ramo Corporation: *See—*
Lawson, Robert R., 3,803,830.

Bunker, William H.: *See—*
Kavanagh, Thomas S.; and Bunker, William H., 3,805,286.

Bunn, Clarence L. Device for grinding a screwdriver tip. 3,803,771, Cl. 51-170.00t.

Burakov, Savely Leonidovich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Alexandr Emelyanovich; Nikolaenko, Evgeny Gritorievich; Sepanov, Grigory Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,804,151.

Burbach, Gerhard Schmidt: *See—*
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Burdge, Thomas S.: *See—*
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Burgdorf, Jochen: *See—*
Beller, Hans Albert; and Burgdorf, Jochen, 3,804,215.

Burger, Jack E.; Howe, Warren B.; and Kyle, William, to Addressograph-Multigraph Corporation. Reprography machine controlled by information of master. 3,804,005, Cl. 101-2.000.

Burning, J. & J., Inc.: *See—*
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Burns, John T.: *See—*
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Burr-Brown Research Corporation: *See—*
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Burris, Palmer E., Jr. Tire anti-skid device. 3,804,143, Cl. 152-225.000.

Burrough, Donald E.: *See—*
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Burroughs Corporation: *See—*
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Coon, Lewis Buel, Jr.; and Stocker, Hermann Walter, 3,805,284.
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Busby, Donald W.: *See—*
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Buscher, Harold T., to General Dynamics Corporation. Apparatus and method for shifting the phase of microwaves. 3,805,197, Cl. 333-31.00a.

Bustin, Leopold. Method of and apparatus for manufacturing a plurality of continuous serrated metal strips from a single strip of feed stock. 3,803,894, Cl. 72-324.000.

Butera, Anthony W.: *See—*
Dematteo, John J.; Leonards, Robert A.; and Butera, Anthony W., 3,803,916.

Butler, Adriana Neil; as beneficiary of the estate of said Edwin K. Butler, deceased: *See—*
Butler, Edwin K., 3,804,673.

Butler, Edwin K., to Butler, Adriana Neil; as beneficiary of the estate of said Edwin K. Butler, deceased. Sea water battery casing for minimizing intercell short circuits. 3,804,673, Cl. 136-100.00m.

Butzow, Neil W.; and Harris, Bernard, to Rexnord Inc. Low friction fabric-lined bearings and improved fabric therefor. 3,804,479, Cl. 308-238.000.

Cable, Walter L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,804,506.

Cairns, Hugh; and Hazard, Richard, to Fisons Limited. Benzodithiapyrone dicarboxylic acids. 3,804,857, Cl. 260-327.0th.

Calcagno, Benedetto: *See—*
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Calderon, Reynaldo: *See—*
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California R. & D. Center: *See—*
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Callahan, James L.; Hardman, Harley F.; and Grasselli, Robert K., to Standard Oil Company, The. Environmentally safe disposal of organic pollutants. 3,804,756, Cl. 270-59.000.

Callaway, Garry R., to Q-Bit Corporation. Television preamplifier. 3,805,164, Cl. 325-373.000.

Campbell, Laurie Jay: *See—*
Lohr, Raymond J.; Campbell, Laurie Jay; and Auer, Robert T., 3,804,427.

Camras, Marvin, to IIT Research Institute. Transducer machine for slideable reception of and automatic electric connection with a hand held type self-contained tape recorder. 3,805,288, Cl. 360-91.000.

Canada Wire and Cable Company Limited: *See—*
Montgomery, Ian David, 3,803,703.

Canadian Copper Refiners Limited: *See—*
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Canadian Patents and Development, Limited: *See—*
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Canavesi, Roberto; Aglietti, Giancarlo; and Calcagno, Benedetto, to Societa Italiana Resine S.p.A. Method for acid reactivating lead poisoned hydrogenation catalysts. 3,804,777, Cl. 252-413.000.

Cann, Peter L.; and Duell, Richard J. 4Carrier Corporation. Centrifugal fan. 3,803,690, Cl. 29-156.40r.

Canon Kabushiki Kaisha: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 3,804,512.
Ogiso, Mitsutoshi; Takahashi, Kiyoshi; Furukawa, Hiroshi; and Itani, Takashi, 3,804,497.
Tsuda, Shin; and Hiraga, Ryozo, 3,805,155.

Cantarano, Costantino Marcus. Device for producing electrographic image from original provided with a conductivity pattern. 3,804,509, Cl. 355-3.00r.

Cantor, Stephen E., to Uniroyal, Inc. Cure of ethylene-propylene-nonconjugated diene terpolymer elastomer. 3,804,798, Cl. 260-42.330.

Cappotto, Samuel D.; Diamond, Herrick R.; and Zeamer, Aaron C., to SCM Corporation. Typewriter ribbon cartridge. 3,804,227, Cl. 197-151.000.

Caputo, James P.: *See—*
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Carborundum Company, The: *See—*
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Carbrey, Robert Lawrence, to Bell Telephone Laboratories, Incorporated. Time division communication system. 3,804,989, Cl. 179-15.0at.

Carey, John R. Rotary locking bolt. 3,804,440, Cl. 292-58.000.

Carey, Raymond L.: *See—*
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Carlsen, Jon Erik Marius: *See—*
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Carpenter, John J.; and Spreckels, Charles C., to Bulova Watch Company, Inc. Quartz-crystal mounting assembly. 3,805,098, Cl. 310-9.100.

Carr, Hugh B.: *See—*
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Carreira, Leonard M.: *See—*
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Carrier Corporation: *See—*
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Carrier Telephone Corporation of America, Inc.: *See—*
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Carroll, Edward E., Jr., to United States of America, Atomic Energy Commission, mesne. Noble gas scintillator for measuring neutron flux. 3,805,076, Cl. 250-365.000.

Carroll, Lamar H., to Lilly, Eli, and Company. Removable implantate for administering physiological active agents to animals. 3,804,088, Cl. 128-260.000.

Cartwright, Earl. Fishing lure. 3,803,747, Cl. 43-42.280.

Cartwright, John Edward: *See—*

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Caruso, Bernard E.: *See—*
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Case, William R., 50% to Alexander, June L. Cutting torch guide attachment. 3,804,391, Cl. 266-23.001.
Cashta, Peter: *See—*
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Casio Computer Co., Ltd.: *See—*
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Kashio, Toshio, 3,805,274.
Cassar, Louis Joseph; and O'Brien, Peter D. Paper dispenser. 3,804,061, Cl. 118-325.000.
Cassey, Harold C. Removable outdoor light structure. 3,805,055, Cl. 240-84.000.
Cassidy, John Edward: *See—*
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Castle, William P., to Xerox Corporation. Chart creation apparatus. 3,805,283, Cl. 354-292.000.
Castonguay, Roger. Portable hoist. 3,804,263, Cl. 212-65.000.
Castro, Rodolfo: *See—*
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Catepillar Tractor Company: *See—*
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See, George L.; and Waggoner, John B., 3,804,435.
Caudill, Louis O., to United States of America, National Aeronautics and Space Administration. Long range laser traversing system. 3,804,525, Cl. 356-152.000.
Cebula, Jerome J.: *See—*
Reed, Dale F.; and Cebula, Jerome J., 3,803,763.
Ceilcate Company, The: *See—*
Marshall, Robert M., 3,803,996.
Celanese Corporation: *See—*
Jamison, Saunders E., 3,804,921.
Randall, John Courtright; and Keith, Charles Herbert, 3,804,695.
Cermak, Milan; and Nepodal, Frantisek, to Praga, automobilove zavody, narodni podnik. Method and apparatus for forming locking surfaces on gear rings. 3,803,896, Cl. 72-355.000.
Cervantes, Lois H. Sewage treatment system. 3,804,755, Cl. 210-50.000.
Chabardes, Pierre; and Colevray, Louis, to Rhone-Poulenc S.A. Ruthenium complexes and processes for their preparation. 3,804,868, Cl. 260-429.00j.
Chabardes, Pierre; and Colevray, Louis, to Rhone-Poulenc S.A. Ruthenium complexes and processes for their preparation. 3,804,869, Cl. 260-429.00j.
Chadwick, Ronald: *See—*
Landman, Dirk; and Chadwick, Ronald, 3,805,212.
Chakhlov, Vladimir Lukyanovich; Zvontsov, Alexandr Akimovich; and Filimonov, Anatoly Alexeevich. Betatron electromagnet. 3,805,202, Cl. 335-210.000.
Challenge-Cook Bros., Incorporated: *See—*
Brennan, George A., 3,803,882.
Chamberlin, Charles L., to Sanibel Sound Co., Inc. Tape cartridge vending machine with rotatable panel. 3,804,480, Cl. 312-117.000.
Chamberlin, Thomas A., to Dow Chemical Company, The. Epichlorohydrin-ammonia resin. 3,804,789, Cl. 260-29.2ep.
Chandhok, Vijay K., to Crucible Inc. Assembly for making a mold. 3,804,575, Cl. 425-405.00h.
Chandler & Price Company, The: *See—*
Rupp, William C., 3,804,399.
Chaney, Clarence E. Rotary mower with selectively actuatable edger. 3,803,818, Cl. 56-11.600.
Chaney, John L. Food preparing thermometers. 3,803,915, Cl. 73-376.000.
Chang, Ji Young; Ewing, William M.; Fulkerson, William; McElroy, David L.; and Weaver, Samuel C., to United States of America, Atomic Energy Commission. Method for preparing massive nitrides. 3,804,928, Cl. 264-.500.
Chang, Richard S.; Bosley, Denis V.; and Roessler, Manfred, to Mattel, Inc. Programmable free-flight toy aircraft. 3,803,758, Cl. 46-243.0av.
Chapman, Harvey W., to Evans Products Company. Freight bracing method and removable air bulkhead therefor. 3,804,027, Cl. 105-369.0ba.
Chapman, Robert David. Vapour deposition coating process. 3,804,665, Cl. 117-107.20p.
Chappell, Howard E.: *See—*
McConnell, William M.; Bradley, William H.; Chappell, Howard E.; and Carey, Raymond L., 3,803,901.
Charbonnages de France: *See—*
Valantin, Alfred, 3,804,221.
Charbonnier, Roger, to Adret Electronique. Frequency synthesizer with multiple control loops. 3,805,181, Cl. 331-2.000.
Charles, Joel M.: *See—*
Davie, Pierre Yvon; Charles, Joel M.; and Fourtier, Maurice Robert, 3,804,452.
Charnley, Peter W.; and Crichton, David R., to Honeywell Inc. Method of making glass seals. 3,803,874, Cl. 65-36.000.
Charnota, Steven; and Wolf, Arnold F. Stock pusher. 3,804,265, Cl. 214-1.300.
Chas. Taylor's Sons Company, The: *See—*
Manigault, Edward L., 3,804,649.
Chatard, Michel; Grolet, Pierre; Reynard, Remi; and Thiery, Jean, to Institut Francais du Petrole des Carburants et Lubrifiants. Apparatus for storing a flexible elongated member, such as a flexible drill column. 3,804,111, Cl. 137-355.160.
Chatsworth Data Corporation, mesne: *See—*
Azure, Leo L., Jr., 3,805,027.
Chatterjea, Probir K.: *See—*
Ruhl, Charles A. H.; Meyer, Edward; and Chatterjea, Probir K., 3,804,122.
Chatterji, Jiten; and Ostroot, Gabriel W., to Halliburton Company. Well cementing method using thixotropic. 3,804,174, Cl. 166-293.000.
Cheateau Wine Cellar Company: *See—*
Smith, Richard D., 3,804,482.
Chekotilo, Leonty Vasilievich: *See—*
Paton, Boris Evgenievich; Thedovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,804,150.
Chem-Trol Pollution Services, Inc.: *See—*
McCord, Andrew T.; and Wagner, Louis E., 3,804,751.
Chemical & Insulating Company Limited, The: *See—*
Laidler, Thomas Gordon; and Booth, Dennis, 3,804,652.
Chemische Werke Huls Aktiengesellschaft: *See—*
Streck, Roland; and Weber, Heinrich, 3,804,803.
Cherniavskyj, Jaroslav: *See—*
Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,804,501.
Chesnokov, Albert Ivanovich: *See—*
Bulatov, Alexandr Alexandrovich; and Chesnokov, Albert Ivanovich, 3,803,944.
Chessin, Hyman; and Best, Maurice Philip, to M&T Chemicals, Inc. Novel chromium plating compositions. 3,804,728, Cl. 204-51.000.
Chetirko, John. Taper lock inserts for thumb and fingers in bowling balls. 3,804,412, Cl. 273-63.00a.
Chevron Research Company: *See—*
Recknagel, Fred M., 3,804,567.
Chicago Pneumatic Tool Company: *See—*
Amisberg, Lester A., 3,803,983.
Chikuma, Toichi; and Marita, Yoshio. Smoke detecting device utilizing optical fibers. 3,805,066, Cl. 250-227.000.
Chin, Arthur Hor Ting: *See—*
Duncan, Anthony Bruce; Sprague, Richard Galen; and Chin, Arthur Hor Ting, 3,804,183.
Chiroui, Nicolae: *See—*
Raduly, Lajus; Urmosi, Ioan; Toderbaun, Nita; and Chiroui, Nicolae, 3,803,803.
Chistov, Vladimir Semenovich; and Novak, Samuil Yakovlevich. Apparatus for cutting holes in walls of pressure vessels. 3,804,545, Cl. 408-101.000.
Chiti, Carlo. Fire-preventing fuel tank for motor vehicles and/or boats. 3,804,292, Cl. 220-88.00b.
Cholet, Prosper Etienne; and Lucien, Jean Rene. Process for desulfurization of chemical media or of materials containing sulfur and/or its derivatives. 3,804,749, Cl. 208-241.000.
Chow, Philip Y. Automated method for preparing packaged skewered meat products. 3,804,955, Cl. 426-302.000.
Christensen, Delbert L.; and Kalin, James A., to Flex-O-Glass, Inc. Package construction. 3,804,237, Cl. 206-451.000.
Christensen, Haldor; Lundt, Behrend Friedrich; Gronvald, Frederik Christian; and Andersen, William, to Novo Terapeutiok Laboratorium A/S. 6-Substituted-chroman-8-carboxylic acids. 3,804,861, Cl. 260-345.200.
Christensen, Helge Kajholm, to Danfoss A/S Nordorg. Control equipment for hydrostatic or hydraulic systems (II). 3,804,119, Cl. 137-625.320.
Christiansen, Richard L.: *See—*
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Chrysler Corporation: *See—*
Martin, Frank J.; Eshelman, Robert W.; and Bergsma, Rudolph, 3,804,109.
McIntire, Elmer L., 3,804,326.
Schenten, James L., 3,803,939.
Woloszyk, Alexander F., 3,803,943.
Chu, Pochen, to Mobil Oil Corporation. Hydrocarbon conversion using crystalline zeolite ZSM-11 catalyst. 3,804,746, Cl. 208-111.000.
Churan, Roy G., to Vulcan Plastics Inc. Container and closure. 3,804,289, Cl. 220-60.00r.
Church, Herman S.; and Hagener, James L., to Teledyne Mid-American Corporation. Anti-pull-out energy absorbing vehicle bumper mount construction. 3,804,445, Cl. 293-88.000.
Churchill Instrument Company, Limited: *See—*
Asdell, David; and Mascall, John R., 3,804,154.
Ciba-Geigy AG: *See—*

Loeffel, Hansrolf; Piller, Bernhard; and Froehlich, Alfred, 3,804,630.
Moergeli, Eduard; and Winkler, Rudolf, 3,804,863.
Siegrist, Adolf Emil, 3,804,773.

Ciba-Geigy Corporation: *See—*
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Bencze, William Laszlo, 3,804,878.
Bickel, Hans; and Mueller, Johannes, 3,804,832.
Sallman, Alfred; and Pfister, Rudolf, 3,804,877.

Cilles, Arthur L., to Jeffrey Galion Inc. Mining machine with a control system for a mining head. 3,804,466, Cl. 299-78.000.

Cincinnati Milacron Inc.: *See—*
Allmandinger, Otto Richard; and Russell, John X., 3,804,477.
Pultz, Wallace W., 3,804,382.
Seidel, William B., 3,803,704.

Cincinnati Milacron-Heald Corporation: *See—*
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Cities Service Company: *See—*
Buckwalter, Geoffrey R., 3,804,640.
Goodwin, Charles M., 3,804,913.
Treilhard, Donald G. J., 3,804,969.

Cities Service Oil Company: *See—*
Robinson, Franklin H.; Rakow, Marvin S.; and Jamieson, Ernest, 3,804,605.
Swift, Samuel C., 3,804,167.

Clancy, David, to Colgate-Palmolive Company. Folded towelette guide and feed mechanism. 3,803,798, Cl. 53-120.000.

Clardy, Leroy, to Swift & Company. Method for dispensing measured quantities of liquid into a food item. 3,804,954, Cl. 426-230.000.

Clark, Charles R.: *See—*
Krehbiel, Delmar D.; Gregory, M. Duane; Clark, Charles R.; and Kennedy, Carl D., 3,804,170.
Krehbiel, Delmar D.; Gregory, M. Duane; Clark, Charles R.; and Kennedy, Carl D., 3,804,171.

Clark, Dale E., to Dow Chemical Company, The. Method internally coating rigid or semi-rigid plastic containers. 3,804,663, Cl. 117-101.000.

Clark, David L.: *See—*
Afful, Matthew K.; and Clark, David L., 3,804,483.

Clark, Gary T.: *See—*
Fisher, John G.; and Clark, Gary T., 3,804,823.

Clark, John Charles: *See—*
Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, 3,804,280.

Clark, Kenneth M., to Deutsch Company Electronic Components Division, The. Method for retaining an electrical connector insert. 3,803,710, Cl. 29-629.000.

Clark, Richard W., to General Motors Corporation. Resilient electrical contact assembly. 3,805,006, Cl. 200-290.000.

Clarke, Graham Morley, to Ferranti Limited. Apparatus used in the tracking of objects. 3,804,485, Cl. 350-7.000.

Clarke, Graham Morley, to Ferranti Limited. Detection of blemishes in a surface. 3,804,534, Cl. 356-237.000.

Clary, James Barney, to Bell Telephone Laboratories, Incorporated. Serial-paralled binary multiplication using pairqise addition. 3,805,043, Cl. 235-164.000.

Clasen, Heinrich. Device for handling flowable materials. 3,804,376, Cl. 259-4.000.

Clauss, Julius A., Jr.; Conley, Jack S.; and Lemon, Robert W., to Borg-Warner Corporation. Transmission. 3,803,948, Cl. 74-763.000.

Cleasby Mfg. Co., Inc.: *See—*
Schrader, William P., 3,804,079.

Cline, David J., to Dynafoil, Inc. Hydrofoil watercraft. 3,804,048, Cl. 114-66.50h.

Closmann, Philip J., to Shell Oil Company. Spreading-fluid recovery of subterranean oil. 3,804,169, Cl. 166-267.000.

Closmann, Philip J.; and Suman, George O., Jr., to Shell Oil Company. Method for the recovery of oil from oil shale. 3,804,172, Cl. 166-272.000.

Clover, Richmond Bennett, Jr., to RCA Corporation. Low birefringent orthoferrites. 3,804,766, Cl. 252-62.570.

Clow Corporation: *See—*
Lee, Dennis D.; and Crookham, Carter C., 3,804,056.

Coad, Peter; and Hill, John Arthur, to Kerr-McGee Chemical Corporation. Process for the extraction of tungsten from an aqueous alkaline solution. 3,804,941, Cl. 423-54.000.

Coates, Harvey W., to Smith, G. D., Inter Ocean Inc. Airplane animal enclosure. 3,804,065, Cl. 119-11.000.

Cobb, Richard O.; and Moore, Albert C., to International Business Machines Corporation. Technique for the conversion of digital form of interspersed symbolic and graphic data. 3,805,237, Cl. 340-146.30h.

Cockerill-Dugree-Providence et Espirance-Longdoz: *See—*
Streel, Dominique Thomas Francois Leon, 3,804,059.

Coe, Cyril Walter: *See—*
Barnaby, Bernard Sydney; and Coe, Cyril Walter, 3,804,224.

Coffield, Thomas H.; Gistous, Chaumont; and Keblys, Kestutis A., to Ethyl Corporation. Hydrometallurgical process. 3,804,614, Cl. 75-103.000.

Cogar Corporation: *See—*
Boisvert, Conrad J., Jr., 3,805,243.

Cohen, William A. Body armour jacket. 3,803,639, Cl. 2-2.500.

Colevray, Louis: *See—*
Chabardes, Pierre; and Colevray, Louis, 3,804,868.
Chabardes, Pierre; and Colevray, Louis, 3,804,869.

Colgan, Joseph Dennis, to American Cyanamid Company. Extruded alumina catalyst supports. 3,804,781, Cl. 252-463.000.

Colgate-Palmolive Company: *See—*
Clancy, David, 3,803,798.
Harrison, Michael; and Tomlinson, Kenneth, 3,804,946.

Colin, Dennis P., to ARP Instruments, Inc. Frequency sensitive circuit employing variable transconductance circuit. 3,805,091, Cl. 307-295.000.

Collignon, Jean, to Abraco S.A. Faucet. 3,804,117, Cl. 137-606.000.

Collins Radio Company: *See—*
Manke, Girard M.; Tribuno, Robert; Hattendorf, Edwin R.; and Schuldt, Theodore J., Jr., 3,805,033.

Collins Radio Company: *See—*
Foster, Jimmie J. L.; and Schultz, Elmer J., 3,805,235.

Colspan Corporation: *See—*
Baier, Robert E., 3,804,753.

Colt Industries Operating Corporation: *See—*
Bell, Oliver A., Jr.; and Gilleland, Randall C., 3,805,012.

Colucci, Stephen L.; Elliott, Michael T.; Erichsen, Ronald L.; Sypniewski, David L.; and Vopat, Frank E., to University of Notre Dame du Lac. Coded access device. 3,805,246, Cl. 340-172.500.

Colwill, Richard H., to Burroughs Corporation. Toggle platen unit. 3,804,015, Cl. 101-297.000.

Commissariat a l'Energie Atomique: *See—*
Barrot, Jean-Pierre; Jaussein, Christian; and Yastroubinski, Andre, 3,805,172.
Delapierre, Gilles, 3,805,149.
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Commonwealth of Australia, The: *See—*
Metcalfe, Kenneth A.; and Lowe, William H., 3,804,660.

Conklin, Robert M., to Brunswick Corporation. Process for building molds to produce pile materials. 3,804,617, Cl. 75-208.00r.

Conley, Jack S.: *See—*
Clauss, Julius A., Jr.; Conley, Jack S.; and Lemon, Robert W., 3,803,948.

Connell, Gordon Sydney, to National Research Development Corporation. Rolling machines. 3,803,890, Cl. 72-107.000.

Conrad, Robert F.: *See—*
Seem, Warren A.; and Conrad, Robert F., 3,803,674.

Consolidated Foods Corporation: *See—*
Anderson, James; Cashta, Peter; and Holloway, John, 3,803,815.

Consolidated Foods Corporation, mesne: *See—*
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Construzioni Meccaniche (OSMEC di Piglin e Conz S.n.C.): *See—*
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Consulab Inc.: *See—*
Delisle, Jules; Deschenes, Pierre A.; and Leroux, Adrien, 3,805,158.

Continental Can Company: *See—*
Simoudis, John C., 3,804,602.

Continental Can Company, Inc.: *See—*
Frankenberg, Henry E., 3,804,283.
Pasternack, George, 3,804,736.
Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,804,735.
Su, Chen-Jen, 3,804,938.

Continental Carbon Company: *See—*
Thomson, Ely Knox, 3,804,136.

Continental Oil Company: *See—*
Hudson, Joseph A., Jr., 3,804,908.
Krehbiel, Delmar D.; Gregory, M. Duane; Clark, Charles R.; and Kennedy, Carl D., 3,804,170.
Krehbiel, Delmar D.; Gregory, M. Duane; Clark, Charles R.; and Kennedy, Carl D., 3,804,171.
Wehking, Frank J., 3,804,134.

Conz, Loris, to Construzioni Meccaniche (OSMEC di Piglin e Conz S.n.C.). Macnine for the instantaneous production of ice cream of one or more flavours. 3,803,870, Cl. 62-342.000.

Cook, Albert C.; and Grey, Donald M., to Sperry Rand Corporation. Ball wagon. 3,804,267, Cl. 214-8.50k.

Cook, William George: *See—*
Gill, Ronald Yaxley; and Cook, William George, 3,804,271.

Cook, William Joseph; and Carlsen, Jon Erik Marius, to DIMO Holdings Limited of Llandowlais Works. Low pressure die castings apparatus. 3,804,152, Cl. 164-306.000.

Coon, Lewis Buel, Jr.; and Stocker, Hermann Walter, to Burroughs Corporation. Digital data copy duplication method and apparatus utilizing bit to bit data verification. 3,805,284, Cl. 360-15.000.

Cooper, John Leslie Edward; and Morris, Peter Alan, to Cosham Engineering and Design Limited. Screen changer. 3,804,758, Cl. 210-65.000.

Cooper, Kenneth W., to Borg-Warner Corporation. Air conditioning control system. 3,803,864, Cl. 62-217.000.

Cooper, Stuart B., to Honeywell Information Systems Inc. Multiplexing apparatus having interlaced and/or parellel data transfer with a data processor and communication lines. 3,804,987, Cl. 179-15.00a.

Copping, Bruce G., to A-T-O Inc. Bottle purging method. 3,804,133, Cl. 141-6.000.

Cordis Corporation: *See—*
Tarjan, Peter F.; Goldstein, Jacob; and Simicich, Esperanto J., 3,804,082.

Corning Glass Works: *See—*
Abeel, Joseph A.; and Schreiber, Charles L., 3,803,762.
Bagley, Rodney D., 3,803,951.
Bockstie, Lawrence G., Jr., 3,804,669.

Boyd, David C., 3,805,107.
Dumbaugh, William H., Jr., 3,804,646.
Elmer, Thomas H.; and Tischer, Richard E., 3,804,647.
Kimber, Ray L., Jr., 3,803,998.
Meissner, Helmuth E.; Orso, Francis L.; Pierce, Timothy E.; and Stiles, Janice L., 3,804,650.
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Cornsweet, Tom N.: *See—*
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Coronet-Werke Heinrich Schlerf GmbH: *See—*
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Cosham Engineering and Design Limited: *See—*
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Costa, Gianmario; Monti, Giancarlo; Poretti, Isidoro; and Bagnoli, Alvaro, to Societe Italiana Telecomunicazioni Siemens S.p.A. PCM telecommunication system having means for temporary degradation of voice channels under overload conditions. 3,804,990, Cl. 79-15.0as.

Cottrex, Gerard: *See—*
Marchand, Jean; and Cottrex, Gerard, 3,805,168.

Coulombe, Lionel J., to Singer Company, The. Pattern cam ejector mechanism. 3,804,041, Cl. 112-158.00a.

Coventry, Sarah, Inc.: *See—*
O'Brien, Lloyd J., 3,804,239.

Covington, Cecil E., to Textron, Incorporated. Four blade main rotor control power coupling. 3,804,552, Cl. 416-134.000.

Cowan, John G., to United States of America, Navy. Wedge shaped raster generation. 3,805,109, Cl. 315-23.000.

Cox, Edgar R., to Texas Industries, Inc. Batch admixture metering control. 3,804,300, Cl. 222-67.000.

Cozzoli, Joseph, to Cozzoli Machine Company. Automatic bottle cleaning machine. 3,804,103, Cl. 134-48.000.

Cozzoli Machine Company: *See—*
Cozzoli, Joseph, 3,804,103.

CPC International Inc.: *See—*
Gooding, Chester M.; and Rowley, Horace P., 3,804,867.

Crane, Hewitt D.; and Cornsweet, Tom N., to Stanford Research Institute. Two dimensional eye tracker and method for tracking an eye. 3,804,496, Cl. 351-6.000.

Crane Packing Company: *See—*
Gardner, James F., 3,804,424.

Crichton, David R.: *See—*
Charnley, Peter W.; and Crichton, David R., 3,803,874.

Crompton, George. Wind turbulence metering. 3,803,910, Cl. 73-188.000.

Crookham, Carter C.: *See—*
Lee, Dennis D.; and Crookham, Carter C., 3,804,056.

Croset, Michel; and Nouailles, Noel. Integrated circuit resistor and a method for the manufacture thereof. 3,805,210, Cl. 338-308.000.

Crossland, Robert Kenneth: *See—*
Williamson, Bobby Joe; Cutting, Arch Eborn; and Crossland, Robert Kenneth, 3,803,824.

Croup, Robert F.: *See—*
Everitt, Scott F.; Croup, Robert F.; and Strawn, Alvin A., 3,804,195.

Crowley, Francis X., to Hession, Crowley, Engineers. Composite sewage tank. 3,804,260, Cl. 210-513.000.

Crucible Inc.: *See—*
Bratt, Richard W.; and Steven, Gary, 3,803,702.
Chandhok, Vijay K., 3,804,575.

Culley, John Edward, to Imperial Metal Industries (Kynoch), Limited. Voltage follower with matched field effect transistors and matched current amplifying transistors for capacitor changing. 3,805,146, Cl. 323-16.000.

Cumber, William J., to Erico Products, Inc. Channel clips. 3,804,359, Cl. 248-205.00r.

Cummings, Gordon F., III, to Borg-Warner Corporation. Temperature modulated variable speed drive and control therefor. 3,804,219, Cl. 192-82.00t.

Cunningham, Arthur L.; Damon, John E.; Bohatiuk, Zenon P.; Mathai, John; and Holton, Howard D., to Sherwin-Williams Company, The. Resin compositions. 3,804,920, Cl. 260-850.000.

Curby, William A. Dynamic method of identifying microbes and evaluating anti-microbial processes. 3,804,720, Cl. 195-103.50r.

Curington, Alfred R.; and Kammerer, Archer W., Jr., to Baker Oil Tools, Inc. Bore hole air hammer drive mechanism. 3,804,181, Cl. 173-128.000.

Curran, Edward T., to United States of America, Air Force. Integral rocket-ramjet with deployable flameholder. 3,803,837, Cl. 60-245.000.

Curry, Byron V. Controlled moisture emitter. 3,804,334, Cl. 239-276.000.

Cutters Machine Company, Inc.: *See—*
Benson, Robert W.; Pearsall, Samuel H.; and Reed, Robert G., 3,804,043.

Cutting, Arch Eborn: *See—*
Williamson, Bobby Joe; Cutting, Arch Eborn; and Crossland, Robert Kenneth, 3,803,824.

Cuvelier, Michel Charles, to Elphioc. Installation of heating by induction. 3,805,010, Cl. 219-10.770.

CX Processing Laboratories, Inc.: *See—*
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Daggy, Earl N., to American Standard Inc. Space divider panel construction. 3,803,787, Cl. 52-241.000.

Dahl, Warren F., to Standard Pressed Steel Co. Method and apparatus for preloading a joint. 3,803,793, Cl. 287-189.36f.

Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, to Merck Patent Gesellschaft mit beschrankter Haftung. Tetrahydroquinoline phenoxyacetic acid derivatives. 3,804,839, Cl. 260-287.00r.

Daicel Ltd.: *See—*
Ishii, Kiyoshi; Konomi, Syobu; and Ishiouro, Yoshio, 3,804,754.
Sakakibara, Kozo; and Yasuda, Kiyoshi, 3,804,902.

Daimler-Benz Aktiengesellschaft: *See—*
Bensinger, Wolf-Dieter, 3,804,560.
Fricker, Ludwig, 3,804,291.
Scherenberg, Hans O.; Rothweiler, Alfred; and Waxenberger, Erich, 3,804,433.

D'Alfonso, Nunzio: *See—*
Rombi, Pietro; and D'Alfonso, Nunzio, 3,804,201.

D'Amico, John Joseph; and Bollinger, Frederic Gerald, to Monsanto Company. 2,5-Dimethyl-1-pyrrolidinecarboxanilides and thiocarboxanilides. 3,804,853, Cl. 260-326.400.

D'Amico, Paul M. Devices as selective master line-yarn holder-cutter storer in combination means. 3,803,650, Cl. 7-14.10r.

Damon Corporation: *See—*
Ferrari, Christopher, 3,804,108.

Damon, John E.: *See—*
Cunningham, Arthur L.; Damon, John E.; Bohatiuk, Zenon P.; Mathai, John; and Holton, Howard D., 3,804,920.

Danfoss A/S: *See—*
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Danfoss A/S Nordorg: *See—*
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Daniels, Jesse: *See—*
Harrell, Larry Douglas; and Daniels, Jesse, 3,804,176.

Dankesreiter, George, to Gebrueder Buehler AG. Stratifier with discharge means for maintaining stratified layers. 3,804,250, Cl. 209-475.000.

Dant & Russell, Inc.: *See—*
Potter, Edward; Potter, Irving W.; and Smyth, Robert M., 3,804,935.

Darcel Ltd.: *See—*
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Dare, Roy R.: *See—*
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Darley, Henry C. H., to Shell Oil Company. Well completion and workover fluid. 3,804,760, Cl. 252-8.55r.

Dart Industries Inc.: *See—*
Kent, Ronald Allan; and Evans, Robert Dee, 3,804,779.
Margolis, Elly T., 3,804,771.
Schrage, Albert; and Finestone, Arnold B., 3,804,919.

Dashew, Stephen S., to LaMesa Industries, Inc. Method for removing form apparatus from cast concrete. 3,804,930, Cl. 264-33.000.

Data General Corporation: *See—*
Austin, James E. D., 3,805,213.

Daun, Henryk: *See—*
Summin, Alfred S.; Daun, Henryk; Gilbert, Seymour G.; and Henig, Yair, 3,804,961.

Davenport Tool Co.: *See—*
Lenker, Paul E., 3,803,954.

Davie, Pierre Yvon; Charles, Joel M.; and Fourtier, Maurice Robert, to Etat Francais represente par le Ministre d'Etat charge de la Defence National Delegation Ministerielle pour l'Armement. Lifting grapple. 3,804,452, Cl. 294-88.000.

Davis, Cecil J., to Bridge Data Products Corporation. Tape drive. 3,804,313, Cl. 226-49.000.

Davis, George B., Jr. Plug-in type Christmas tree light. 3,805,215, Cl. 339-65.000.

Davis, Robert L.: *See—*
Zucker, Sandra; Faber, Ulbe; and Davis, Robert L., 3,805,247.

Dawson, Rosette D. Protein synthesis game. 3,804,417, Cl. 273-134.0ae.

Dawson, Ross R.; and Leyking, William H., to Dow Chemical Company, The. Increasing dye fastness of solvent dyed solvent scoured dried fabric by steaming. 3,804,589, Cl. 8-165.000.

Day, John; and Thomas, David Kenneth, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fluorohydrocarbon elastomers. 3,804,801, Cl. 260-42.270.

Days-Ease Home Products Corporation: *See—*
Levey, John S., 3,804,331.

de Beixedon, Philip C. Fishing pole device. 3,803,744, Cl. 43-15.000.

De Benneville, Peter L.; Godfrey, William J.; and Sims, Homer J., to Rohm & Haas Company. Method for the direct acylation of aminobenzoic acids. 3,804,821, Cl. 260-112.500.

De Caro, Charles J., to Textron, Inc. Tire stud. 3,804,142, Cl. 152-210.000.

De Gaudemaris, Gabriel: *See—*
Haemmerly, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,804,852.

De Lepeleire, Guido Amandus, to Danfoss A/S. Bag diaphragms and bag diaphragm operated air dampers. 3,804,364, Cl. 251-43.000.

De Messimy, Philipps R. Des Rioux; Erichsen, Herman W.; and Webb, Raymond C., to Tyco Laboratories, Inc. Object detecting apparatus. 3,805,061, Cl. 250-209.000.

De Mott, John C., to Xerox Corporation. Fire detecting device for a photographic printing machine. 3,804,516, Cl. 355-133.000.

De Soto, Inc.: *See—*
Sekmakas, Kazys, 3,804,786.
Sekmakas, Kazys, 3,804,790.

De Weck, Alain: *See—*
Quitt, Peter; Volger, Karl; and De Weck, Alain, 3,804,820.

Deckard, John I., to General Motors Corporation. Electromagnetic thrusters. 3,805,203, Cl. 335-239.000.

DeDiemar, Ronald B., to Barber-Greene Company. Jaw crusher die mounting. 3,804,345, Cl. 241-264.000.

Deere & Company: *See—*
Johnston, Dale Montieth; and Keith, Nelson Paul, 3,803,957.

Del Castillo, Juan M. Light optical metronome. 3,803,971, Cl. 84-484.000.

Del Piero, Elio, to Solvay & Cie. Molding apparatus. 3,804,573, Cl. 425-387.00b.

Delapierre, Gilles, to Commissariat a l'Energie Atomique. Method of linear measurement of a variation in capacitance and corresponding digital-display device. 3,805,149, Cl. 324-60.00c.

DeLaval Turbine Inc., mesne: *See—*
Sennet, Morgan B.; and Bond, Morton K., 3,804,565.

Delisle, Jules; Deschenes, Pierre A.; and Leroux, Adrien, to Consulab Inc. Demand meter with limit indicator. 3,805,158, Cl. 324-157.000.

Delmastro, Albino F.: *See—*
Fischer, Carl E.; Delmastro, Albino F.; Burdge, Thomas S.; Brewington, Harrel B.; Harris, John B.; and Zaremba, Joseph, 3,804,187.

Delorme, Jean: *See—*
Bossaert, Jean; Delorme, Jean; and Ernvein, Joel, 3,805,225.

Delta Design, Inc.: *See—*
Richelmann, Bernd H., 3,805,159.

Dematteo, John J.; Leonards, Robert A.; and Butera, Anthony W., to United States of America, Navy. Direct measurement of earth's vertical deflection using ships inertial navigation system. 3,803,916, Cl. 73-382.000.

Demetrescu, Mihai C. Vibrating-to-rotary energy converter. 3,805,083, Cl. 290-1.000.

Demeules, Hector Z. Saber saw bracket. 3,803,775, Cl. 51-241.000.

Demler, Henry William, Sr.; and Minchhoff, Paul Joseph, to AMB Incorporated. Resilient electrical contact. 3,805,214, Cl. 339-17.000.

Demou, John G.; Pizzini, Louis C.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Flexible cellular polyurethane foam compositions having increased flame retardance. 3,804,782, Cl. 260-2.5aw.

Dennis, Clifford E. Thermal engine. 3,803,845, Cl. 60-527.000.

Dennison Manufacturing Company, mesne: *See—*
Arciprete, Cenio R.; Brokaw, Adrian F.; Dumais, Richard E.; and Stucchi, Richard F., 3,804,007.

Dentsply International Inc.: *See—*
Gonser, Donald I., 3,804,096.

Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Amino derivatives of pyrazolopyridine carbonitriles. 3,804,843, Cl. 260-294.900.

Deschamps, Jacques Desire; and Adamsbaum, Andre, to Societe Nationale d'Etude et de Constructions de Motorens d'Aviation. Navigational process and device for path control. 3,805,261, Cl. 343-5.0mm.

Deschenes, Pierre A.: *See—*
Delisle, Jules; Deschenes, Pierre A.; and Leroux, Adrien, 3,805,158.

Deutsch Company Electronic Components Division, The: *See—*
Clark, Kenneth M., 3,803,710.

Deutsche Texaco Aktiengesellschaft: *See—*
Ruschenburg, Ernst, 3,804,757.

Deutsche Vergaser Gesellschaft m.b.H. & Co. K.G.: *See—*
Zahr, Karl-Heinz; and Hartel, Gunter, 3,804,384.

Deutscher, Keith Mills, to Illinois Tool Works, Inc. Fasteners. 3,803,972, Cl. 85-1.0jp.

Dexter Corporation, The: *See—*
Fetscher, Charles A.; and Gapa, John J., 3,804,862.

Dey, Arabinda N., to Mallory, P. R., & Co., Inc. Method of making a molybdenum trioxide electrode by pyrolytic decomposition. 3,804,672, Cl. 136-20.000.

Diamond, Herrick R.: *See—*
Cappotto, Samuel D.; Diamond, Herrick R.; and Zeamer, Aaron C., 3,804,227.

Diamond, Julius, to Rorer, William H., Inc. Phenylphosphonium salts for treating hyperacidity or ulceration. 3,804,950, Cl. 424-198.000.

Diem, Rudolf; and Meurer, Horst, to SKF Industrial Trading and Development Company N.V. Apparatus for testing ball bearings. 3,803,904, Cl. 73-67.50r.

Dieterich, Peter D. Sampling and flow measuring device. 3,803,921, Cl. 73-422.00r.

Dillon, Janus J., to Food Equipment, Inc. System for automatically washing the interior of fowl carcasses. 3,803,669, Cl. 17-11.000.

Dimeler, Glenn R.: *See—*
Mills, Ivor W.; and Dimeler, Glenn R., 3,804,743.

Dimmig, Daniel Ashton, to Pennwalt Corporation. 1,1'-Carbonylbis(carboxypiperidines). 3,804,842, Cl. 260-293.630.

DIMO Holdings Limited of Llandowlais Works: *See—*
Cook, William Joseph; and Carlsen, Jon Erik Marius, 3,804,152.

Dockstander, Robert J. Flashing jewel pendant. 3,805,047, Cl. 240-6.40w.

Docutel Corporation: *See—*
Johnson, Ivan E., 3,804,274.

Dohse, Ruthard J., to Elektro-Thermit GmbH. Elastic support for guard rails. 3,804,327, Cl. 238-18.000.

Domergue, Annick Marthe Suzanne Simone: *See—*
Mingasson, George Raymond Henry; and Domergue, Annick Marthe Suzanne Simone, 3,804,837.
Mingasson, Georges Raymond Henry; and Domergue, Annick Marthe Suzanne Simone, 3,804,838.

Domnick, Hans. Still picture camera having two film cassettes. 3,805,277, Cl. 354-21.000.

Donahue, John A.; and Minden, Henry T., to Sperry Rand Corporation. Liquid epitaxy apparatus. 3,804,060, Cl. 118-64.000.

Donnally, Robert B., to Moore, Lee C., Corporation. Folding pole for high floor mast. 3,803,780, Cl. 52-116.000.

Dortenzo, Alexander T.: *See—*
Maurice, Harvey W.; and Dortenzo, Alexander T., 3,804,393.

Dossou, Koovi Gatien: *See—*
Manoussos, Georges; Dossou, Koovi Gatien; and Gascon, Martine, 3,804,094.

Dougherty, Harold B.: *See—*
United States of America, National Aeronautics and Space Administration, 3,804,506.

Dow Chemical Company, The: *See—*
Bergeron, Grafton L., 3,804,739.
Best, John S., 3,804,543.
Broxterman, William E.; Schmidt, Donald L.; and Evani, Syamalarao, 3,804,797.
Chamberlin, Thomas A., 3,804,789.
Clark, Dale E., 3,804,663.
Dawson, Ross R.; and Leyking, William H., 3,804,589.
Hickner, Richard A.; and Farber, Hugh A., 3,804,900.
Jeffrey, Gaines Clayton; and Embrey, Wallace Eldon, 3,804,884.
Jennings, Robert R., 3,804,173.
Katzer, Melvin F.; and Routson, Willis G., 3,804,556.
Lane, George A.; and Williams, Robert L., 3,804,328.
Martin, John; and Johnson, Francis, 3,804,850.
Miller, Gordon R., 3,804,931.
Perry, William O.; Sorenson, Marius W.; and Hairston, Thomas J., 3,804,795.
Pews, R. Garth, 3,804,792.
Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., 3,804,844.
Reineke, Charles E.; and Gibbons, Carl L., 3,804,885.
Rusk, Earl E., 3,803,902.
Watts, Harry; and Schreiber, Kurt, 3,803,761.

Doyle, William C., Jr., to Gulf Research & Development Company. Process for manufacturing a liquid thiocarbamate. 3,804,873, Cl. 260-455.00a.

Drangeid, Karsten E.; Mohr, Theodor O.; Statz, Horst F.; and Von Muench, Waldemar, to International Business Machines Corporation. Method for making a Schottky-barrier field effect transistor. 3,804,681, Cl. 148-188.000.

Drayer, Dennis E.: *See—*
Merrill, La Vaun S., Jr.; Drayer, Dennis E.; Gogarty, William B.; and Pouska, George A., 3,804,752.

Drehman, Lewis E.; and Farha, Floyd, Jr., to Phillips Petroleum Company. Upgrading gasoline. 3,804,745, Cl. 208-80.000.

Dresser Industries, Inc.: *See—*
Ellis, Gary D., 3,804,164.
Fisher, Ernest Pillow, Jr.; and Abney, David Lewis, Jr., 3,804,166.
Meripol, Robert B., 3,804,165.

Dresser Industries, Inc., mesne: *See—*
Peterson, George N., 3,804,687.

Drexel Equipment (U.K.) Limited: *See—*
Duggan, James Daniel, 3,803,942.

Drexel, Richard Jacob, Jr.: *See—*
Morris, Horton Harold; Drexel, Richard Jacob, Jr.; and Turner, Kenneth Lamar, 3,804,653.

Driskell, Carl R., to United States of America, Navy. Colored running lights simulator. 3,804,977, Cl. 178-6.800.

Driver's Dream, Inc.: *See—*
Triplett, Arthur L., 3,803,664.

Drown, Harold Lewis: *See—*
Royce, Damon Vernerd, Jr.; and Drown, Harold Lewis, 3,804,598.

D'Silva, Arthur P.; and Fassel, Velmer A., to United States of America, Atomic Energy Commission. Method and apparatus for detecting the presence and quantity of mercury in a sample of organic material. 3,805,077, Cl. 250-372.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bergna, Horacio Enrique, 3,804,802.
Bigelow, John H., 3,804,632.
Booy, Max Lorenz, 3,804,423.
Esbitt, Irving P., 3,804,784.
Fryd, Michael, 3,804,810.
Kendrick, Earl L.; and Sandberg, Harry W., 3,804,160.
Knowles, Richard N., 3,804,800.
Langsdorf, William Philip, Jr., 3,804,830.
Lin, Otto C. C., 3,803,903.
Low, David N., 3,803,805.
Morgan, Paul Winthrop, 3,804,791.
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Du Pont de Nemours, E.I., and Company: *See—*
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Dubinsky, Rudolf Solomonovich: *See—*

Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Botko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Popov, Lev Vasilievich; Anisiferov, Stanislav Stepanovich; and Kulikov, Anatoly Petrovich, 3,804,149.

Dubrawka, Edward G.: *See—*
Hahn, Ronald A.; and Dubrawka, Edward G., 3,804,615.

Dubuc, Rene A.; White, Sheldon S.; and Willoughby, Joseph A., to Texas Instruments, Incorporated. Electrical contact and method of fabrication. 3,803,711, Cl. 29-630.000.

Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich. Method of packing stacks of flat articles into packages ad framework used for effecting same. 3,803,797, Cl. 53-32.000.

Ducommun, Rene Albert, to International Armament Corporation. Safety device for a cylinder revolver. 3,803,741, Cl. 42-66.000.

Duell, Richard J. 4Carrier Corporation: *See—*
Cann, Peter L.; and Duell, Richard J. 4Carrier Corporation, 3,803,690.

Duellette, Joseph F. Closure removing apparatus and method. 3,803,795, Cl. 53-3.000.

Duesberg, Wilfried: *See—*
Klehrmann, Jurgen; and Duesberg, Wilfried, 3,803,859.

Duffield, Peter L.: *See—*
Brady, Cyrus T.; Duffield, Peter L.; and Houser, Philip H., 3,805,273.

Duffy, James V., to United States of America, Navy. Crosslinked polyamide-quinoxalines. 3,804,807, Cl. 260-65.000.

Duggan, James Daniel, to Drexel Equipment (U.K.) Limited. Pawls. 3,803,942, Cl. 74-577.00r.

Dumais, Richard E.: *See—*
Arciprete, Cenio R.; Brokaw, Adrian F.; Dumais, Richard E.; and Stucchi, Richard F., 3,804,007.

Dumbaugh, William H., Jr., to Corning Glass Works. Very rich elastic moduli glasses. 3,804,646, Cl. 106-52.000.

Duncan, Anthony Bruce; Sprague, Richard Galen; and Chin, Arthur Hor Ting, to Rucker Company, The. Drill string compensator. 3,804,183, Cl. 175-5.000.

Dundon, John Peter; Kemme, Herbert Rudolph; and Scharf, Edward Jonathan, to American Cyanamid Company. Purification of beta-naphthol by steam distillation. 3,804,723, Cl. 203-92.000.

Dunn, Nelson H.: *See—*
Alger, Martin J., Jr.; and Dunn, Nelson H., 3,803,687.

Dunn, Robert T.: *See—*
Smith, Jack T., 3,804,522.

Dunsmoor, Forrest L.: *See—*
Kuyper, Herman S.; and Dunsmoor, Forrest L., 3,803,779.

Dusheck, George J., Jr., to United States of America, Navy, mesne. Transitor detector. 3,805,170, Cl. 328-114.000.

Dyckerhoff & Widmann Aktiengesellschaft, Firma: *See—*
Finsterwalder, Ulrich; Finsterwalder, Klemens; and Buhrer, Rudolf, 3,803,785.

Dynafoil, Inc.: *See—*
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Dzus Fastener Co., Inc.: *See—*
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Eastech, Inc.: *See—*
Brumheller, Ronald L., 3,805,171.

Eastman Kodak Company: *See—*
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Harvey, Donald M., 3,804,626.
Harvey, Donald M., 3,804,627.
Kuhfuss, Herbert F.; and Jackson, Winston J., Jr., 3,804,805.

Ebersman, Benjamin; Meehan, John V.; and Wilson, William T., to International Business Machines Corporation. Recirculating testing methods and apparatus. 3,805,152, Cl. 324-73.00r.

Ebnother, Anton; and Hasspacher, Klaus, to Sandoz Ltd. 3-Alkylamino-2-(3,4-dihydroxyphenyl)propanols and the salts thereof. 3,804,899, Cl. 260-570.600.

Eckdahl, Thomas H., to Plastics, Inc. Beverage cruet. 3,804,281, Cl. 215-13.00r.

Eckhardt, Roger S. Center maintaining rotary feeding system. 3,803,679, Cl. 29-27.00r.

Eda, Korekiyo: *See—*
Ohno, Yoshio; Eda, Korekiyo; Yamamura, Toshio; and Yamasaki, Kosaburo, 3,804,690.

Edelman, Yakov Alexandrovich: *See—*
Gusman, Moisei Timofeevich; Konstantinov, Leonid Pavlovich; Malkin, Boris Davidovich; Martyshin, Adolf Nikolaevich; Nikitin, Gely Meierovich; and Edelman, Yakov Alexandrovich, 3,804,184.

Eden, Dayton D., to Advanced Technology Center, Inc. Light beam scanning systems and beam shifting devices for use in such systems. 3,804,488, Cl. 350-160.00r.

Edison, David M., to Westinghouse Electric Corporation. Elevator system. 3,804,209, Cl. 187-29.00r.

Eduard Kusters Maschinenfabrick: *See—*
Appenzeller, Valentin, 3,803,883.

Egawa, Hitoshi: *See—*
Nakamura, Toshio; Egawa, Hitoshi; Kawai, Sadaharu; and Takahashi, Koichi, 3,804,476.

Egbert, James: *See—*
Konkal, John; Egbert, James; and Richards, Robert W., 3,803,928.

Ege, Hans, to Underwriters Safety Device Co. Switch. 3,805,206, Cl. 337-9.000.

Egorov, Sergei Petrovich: *See—*
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Ehrlich, Donald J., to Monon Trailer Inc. Tie rail. 3,804,436, Cl. 280-179.00a.

Ehrlich, Stephen Jeffrey, to Black and Decker Manufacturing Company, The. Trimmer-edger with handle clamp. 3,803,819, Cl. 56-17.100.

Eichelberger, Charles W.: *See—*
Michon, Gerald J.; and Eichelberger, Charles W., 3,805,062.

Eickmann, Karl. Rotary radial piston type fluid handling device. 3,803,986, Cl. 91-492.000.

Einaudi, Mario, to Nazionale Cogne S.p.A. Device for the final binding of yarn on bobbins for ring spinning and twisting machines. 3,803,825, Cl. 57-54.000.

Eisenstat, Norman C.: *See—*
Litman, Alan L.; Eisenstat, Norman C.; and Horowitz, Don R., 3,805,257.

Ekman, Karl Ake; and Blomqvist, Nils Verner, to Mo och Domsjo AB. Method and apparatus for producing dry-defibrated cellulose pulp. 3,804,340, Cl. 241-28.000.

Electrohome Limited: *See—*
Remick, Cassius D., 3,803,668.

Electronic Communications, Inc.: *See—*
Ocnaschek, Frank Joseph; and Wade, Eugene Robert, 3,805,192.
Peck, Wayne P., 3,803,688.

Electronique Marcel: *See—*
Gerard, Collot, 3,805,267.

Elektro-Thermit GmbH: *See—*
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Elford, David; and Jones, Patrick, to Kelly & Lewis Pty., Ltd. Apparatus for treatment of canned material. 3,803,999, Cl. 99-362.000.

Ellanin Investments, Ltd.: *See—*
Lowry, John D., 3,804,980.

Elliott, James O., to Auto Crane Company. Convertible rail-highway vehicle. 3,804,025, Cl. 105-215.00c.

Elliott, Michael T.: *See—*
Colucci, Stephen L.; Elliott, Michael T.; Erichsen, Ronald L.; Sypniewski, David L.; and Vopat, Frank E., 3,805,246.

Ellis, Gary D., to Dresser Industries, Inc. Well packer apparatus having improved hydraulically-actuated anchor assembly. 3,804,164, Cl. 166-120.000.

Ellis, Jonas. Method of and apparatus for high speed printing of credit cards. 3,804,226, Cl. 197-133.00r.

Ellis, Leonard C.: *See—*
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Ellison, James T. N'th power Galois lenear gate. 3,805,037, Cl. 235-152.000.

Elmer, Thomas H.; and Tischer, Richard E., to Corning Glass Works. Porous glass supports for automotive emissions control catalysts. 3,804,647, Cl. 106-54.000.

Elmore, Lester C.; and Broxholm, Thomas M., to Pulsepower Systems, Inc. Liquid propellant weapon. 3,803,975, Cl. 89-7.000.

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Paton, Boris Evgenievich; Thedovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,804,150.

Emerson Electric Co.: *See—*
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Love, John J.; and Pleer, Thomas P., 3,804,118.

Emery Industries, Inc.: *See—*
Ludwig, Jerome H.; and Witsken, Kenneth J., 3,804,875.

Emile, Raymond Francois. Plant for manufacturing reinforced concrete construction panels. 3,804,361, Cl. 249-78.000.

Emmons, William D.: *See—*
Bakule, Ronald D.; Gill, Robert A.; and Emmons, William D., 3,804,668.

Endo, Takashi; and Yamashita, Riichiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Material discriminating device for metallic plates. 3,803,908, Cl. 73-100.000.

Engalitcheff, John, Jr.; Facius, Thomas F.; and Bradley, Wilson E., Jr., to Baltimroe Aircoil Company, Inc., mesne. Wet deck fill section. 3,804,389, Cl. 261-111.000.

Engebretsen, Einar O.: *See—*
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Engelhard Minerals & Chemicals Corporation: *See—*
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Ensor, John W.; and Popodi, Alfred E., to Westinghouse Electric Corporation. CRT horizontal deflection circuit. 3,805,110, Cl. 315-27.00r.

Entreprise de Recherches et d'Activites Petrolieres: *See—*

Haemmerly, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,804,852.
Eppensteiner, Frederick Walter, to M & T Chemicals Inc. Nickel etch composition. 3,804,768, Cl. 252-79.400.
Eppler, Richard Andrew; and O'Conor, Eugene F., to SCM Corporation. Glazed ceramic ware. 3,804,666, Cl. 117-125.000.
Erichsen, Herman W.: *See—*
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Erichsen, Ronald L.: *See—*
Colucci, Stephen L.; Elliott, Michael T.; Erichsen, Ronald L.; Sypniewski, David L.; and Vopat, Frank E., 3,805,246.
Erickson, Albert L., to Nielsen Engineering & Research, Inc. Cancellating device for suppressing oscillations of structures in fluid flow. 3,804,210, Cl. 188-1.00b.
Erickson, Arlen J.: *See—*
Tall, Leonard H.; Carlstedt, Paul A.; and Erickson, Arlen J., 3,804,242.
Erickson, Rodney R.; and Johnson, Gordon W., to Catepillar Tractor Company. Steering actuated motor displacement control valve. 3,803,841, Cl. 60-421.000.
Erico Products, Inc.: *See—*
Cumber, William J., 3,804,359.
Ericson, Alvin E., to Union Carbide Corporation. Plastic bag having arcuate closed end and arcuate lipped open end. 3,804,322, Cl. 229-53.000.
Ericson, Richard E., to Bard, C. R., Inc. Surgeons gown with cummerbund. 3,803,640, Cl. 2-114.000.
Erlichman, Irving, to Polaroid Corporation. Photographic apparatus having mechanical indexing means for a multi-lamp flash unit. 3,805,282, Cl. 354-144.000.
Erling, Frank H.: *See—*
Erling, Frank H.; Nelsen, Gordon E.; and Bearfield, Clair A., 3,803,642.
Erling, Frank H.; Nelsen, Gordon E.; and Bearfield, Clair A., to Hoxeng, Julian S., Erling, Frank H., Nelsen, Gordon E. and Bearfield, Clair A. Foldable bed bath. 3,803,642, Cl. 4-177.000.
Ernvein, Joel: *See—*
Bossaert, Jean; Delorme, Jean; and Ernvein, Joel, 3,805,225.
Esbitt, Irving P., to Du Pont de Nemours, E. I., and Company. Nitrocellulose/synthetic polymer adhesive. 3,804,784, Cl. 260-14.000.
Eshelman, Robert W.: *See—*
Martin, Frank J.; Eshelman, Robert W.; and Bergsma, Rudolph, 3,804,109.
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Essex International, Inc.: *See—*
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Essilor International (Compagnie Generale d'Optique): *See—*
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Ettles, Christopher Mills McCullock. Journal bearings. 3,804,474, Cl. 308-122.000.
European Atomic Energy Community (Euratom): *See—*
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Broxterman, William E.; Schmidt, Donald L.; and Evani, Syamalarao, 3,804,797.
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Evans, Thomas Ernest; and Sutton, William Heald, to International Nickel Company, Inc., The. Control of electrolytic coloring of chronium-containing alloys. 3,804,730, Cl. 204-56.00r.
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Everest, Charles E.; and Voznick, Henry P., to Wahl, William, Corporation. Fire control system. 3,803,974, Cl. 89-1.50e.
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Eyman, Douglas R.; and Lewicki, Walter J., Jr., to Armstrong Cork Company. Process for producing decorative surface covering. 3,804,657, Cl. 117-11.000.
Faber, Egon; Jaksch, Ernst; and Stark, Karl-Heinz, to Supramar AG. Retraction arrangement for the bow foil of hydrofoil craft. 3,804,047, Cl. 114-665.00h.
Faber, Ulbe: *See—*
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Fahey, Darryl R., to Phillips Petroleum Company. Ruthenium(II) complexes as catalysts for selective hydrogenation of cyclic polyenes to cyclic monoenes. 3,804,914, Cl. 260-666.00a.
Fahrner, Richard L., to United States of America. Sampled signal servo control system. 3,805,137, Cl. 318-636.000.
Falbe, Jurgen: *See—*
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Faldi, Giovanni. Porcess and apparatus for achieving the mechanical trenching of a pipe-line in a sub-aqueous depth. 3,803,856, Cl. 61-724.000.
Falitz, Leonard. Tennis ball retriever. 3,804,449, Cl. 294-19.00a.
Fallon, Herbert J.; and Garnett, Jack L., to Bendix Corporation, The. Work feeder for a double disc grinder. 3,803,769, Cl. 51-112.000.
Fan, George J.; and Toupin, Richard A., to International Business Machines Corporation. Recording system utilizing magnetic deflection. 3,805,272, Cl. 346-75.000.
Fannon, Robert D., Jr., to Harsco Corporation. Automatic window washer. 3,803,656, Cl. 15-302.000.
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Farber, Sheldon, to National Cash Register Company, The. Naphthalide compounds. 3,804,855, Cl. 260-326.14r.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Farfaletti-Casali, Flaviano, to European Atomic Energy Community (Euratom). Thermally insulated panel for a gas cooled nuclear reactor. 3,804,712, Cl. 176-87.000.
Farha, Floyd, Jr.: *See—*
Drehman, Lewis E.; and Farha, Floyd, Jr., 3,804,745.
Fariello, Leonard Anthony. Smoking pipe. 3,804,100, Cl. 131-173.000.
Farmer, John, to Ward Foods, Inc. Displacement rinsing apparatus. 3,804,670, Cl. 127-5.000.
Farrell, James H.; Bianchi, Ralph A.; and Johanson, Edward E., to JBF Scientific Corporation. Floatage collection apparatus and method. 3,804,251, Cl. 210-83.000.
Fassauer, Arthur L. System for metering particulate material. 3,804,303, Cl. 222-193.000.
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Fassy, Henri; Lalet, Philippe; and Miletto, Andre, to Societe Anonyme dite: Aquitaine-Total Oranico Tour Aquitaine. Vinyl chloride copolymers suitable for cross-linking. 3,804,814, Cl. 260-87.50r.
Faust, Raimund Josef, to Kalle Aktiengesellschaft. Photopolymerizable copying composition. 3,804,631, Cl. 96-115.00p.
Feasby, David L.: *See—*
Roberts, Donald J.; and Feasby, David L., 3,805,017.
Federal Enterprises Inc.: *See—*
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Feichtinger, Hans: *See—*
Noeske, Heinz; Feichtinger, Hans; and Falbe, Jurgen, 3,804,901.
Feichtner, John D.; Gottlieb, Milton; and Roland, George W. Acousto-optical systems. 3,805,196, Cl. 333-30.00r.
Feigin, Abner Oscar; Bailey, Floyd Leroy; and Smith, Russell Yerby, Jr., to Jennings, Cedric Copeland and Allied Chemical Corporation. Method for controlling yellow jacket populations. 3,803,753, Cl. 43-131.000.
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Fell, Wilhelmine M., to Lee, Raymond, Organization, Inc., The. Medical device recta-bag. 3,804,093, Cl. 128-286.000.
Felstehausen, Eugene F., to FMC Corporation. Spreader conveyor. 3,804,228, Cl. 198-31.0ab.
Fera, Jose. Process for producing powdered paraffin wax. 3,804,744, Cl. 208-24.000.

Fernandez-Luque, Refael; and Goppel, Johan M., to Shell Oil Company. Process for building an island. 3,803,852, Cl. 61-46.000.

Fernholz, Hans; and Freudenberger, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of benzyl cyanide. 3,804,876, Cl. 260-465.00r.

Ferranti Limited: *See—*
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Clarke, Graham Morley, 3,804,534.

Ferrari, Christopher, to Damon Corporation. Apparatus for the selective dispensing of a liquid and a gas. 3,804,108, Cl. 137-112.000.

Fetscher, Charles A.; and Gapa, John J., to Dexter Corporation, The. Process for purifying monomeric polyglycidyl compounds. 3,804,862, Cl. 260-348.00r.

Fetterolf, John S.: *See—*
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Fetterolf, John S.; and Williams, James W., III. Flush bottom tank valve. 3,804,365, Cl. 251-144.000.

Fetters, Lewis J.; Kammereck, Rudolf F.; and Morton, Maurice, to University of Akron, The. Rubbery polymers. 3,804,922, Cl. 260-874.000.

Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Safety belt tensioning arrangement. 3,804,430, Cl. 280-150.0sb.

Ficken, William H.: *See—*
Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., 3,803,924.

Field, Nathan D.: *See—*
Allan, John L. M.; and Field, Nathan D., 3,804,933.

Filimonov, Anatoly Alexeevich: *See—*
Chakhlov, Vladimir Lukyanovich; Zvontsov, Alexandr Akimovich; and Filimonov, Anatoly Alexeevich, 3,805,202.

Filippov, Andrei Nikiforovich; Toilin, Sergei Ivanovich; and Liberzon, Lev Abramovich. Sintered Ag-graphite-Ni metal ceramic material for making electric contacts and method of producing same. 3,804,599, Cl. 29-182.500.

Filippovichbelyaev, Ivan: *See—*
Goltsov, Viktor Alexeevich; Geld, Pavel Vladimirovich; Kagan, Genrikh Efimovich; Timofeev, Nikolai Ivanovich; Filippovichbelyaev, Ivan; Mitjushov, Viktor Alexandrovich; and Kurumchina, Saule Khuryatbekovna, 3,804,616.

Finestone, Arnold B.: *See—*
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Finger, John F., to Sioux Corporation. Vertical fish farm. 3,804,063, Cl. 119-3.000.

Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D., to Bloom Engineering Company, Inc. Three lever valve with relief port. 3,804,124, Cl. 137-630.140.

Finn, Frank John: *See—*
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Finsterwalder, Klemens: *See—*
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Finsterwalder, Ulrich; Finsterwalder, Klemens; and Buhrer, Rudolf, to Dyckerhoff & Widmann Aktiengesellschaft, Firma. Anchoring means for tensioned member for heavy loads, for example, a slanted cable bridge. 3,803,785, Cl. 52-230.000.

Fiore, Angelo Ralph, Jr.: *See—*
Bhattacharyya, Ranendra K.; Fiore, Angelo Ralph, Jr.; and Rudd, David William, 3,805,044.

Fiorino, Benjamin C.; and Rodriguez, Juan A. Digital time sampling phase comparator with noise rejection. 3,804,992, Cl. 178-69.50r.

Firestone Tire & Rubber Company, The: *See—*
Lawson, David Francis; Willis, James M.; and Kyker, Gary Stephen, 3,804,927.

Fischer, Artur. Blocks with non-circular slits and flat connectors having transversely bowed middle portions. 3,803,754, Cl. 46-26.000.

Fischer, Carl E.; Delmastro, Albino F.; Burdge, Thomas S.; Brewington, Harrel B.; Harris, John B.; and Zaremba, Joseph, to Caterpillar Tractor Company. Buring tool. 3,804,187, Cl. 175-409.000.

Fischer, George, AG: *See—*
Bernath, Oskar, 3,804,129.

Fischer, Harry C., to Allied Chemical Corporation. Catalytic ammonia burner. 3,804,596, Cl. 23-288.00r.

Fish, Vernon R. Accelerometer and antiskid braking system. 3,804,471, Cl. 303-21.00b.

Fisher, Donald H., to Xerox Corporation. Regulated corona generator. 3,805,069, Cl. 250-326.000.

Fisher, Ernest Pillow, Jr.; and Abney, David Lewis, Jr., to Dresser Industries, Inc. Gripping member for well tools or the like. 3,804,166, Cl. 166-216.000.

Fisher, John G.; and Clark, Gary T., to Eastman Kodak Company. Heterocyclic containing monoazo compounds. 3,804,823, Cl. 260-158.000.

Fisons Limited: *See—*
Cairns, Hugh; and Hazard, Richard, 3,804,857.
Johnson, Peter Bennett; and Lee, Thomas Brian, 3,804,860.

Fitzwilton Limited: *See—*
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Fizechesky Institut Imeni P.N. Lebedria Akademii Nauk SSR: *See—*
Kozlov, Stanislav Fedorovich, 3,805,078.

Fleischfresser, Gerald H., to GTE Automatic Electric Laboratories Incorporated. Method and arrangement for entering non-synchronous information into two machines which run synchronously. 3,805,240, Cl. 340-147.540.

Fleissner, Heinz, to Vapa AG. Process for the continuous treatment of thick, voluminous textile materials. 3,804,590, Cl. 8-149.100.

Flex-O-Glass, Inc.: *See—*
Christensen, Delbert L.; and Kalin, James A., 3,804,237.

Fliesser, Engelbert; Pustka, Karel; and Wagensonner, Eduard, to Agfa-Gevaert Aktiengesellschaft. Illumination control arrangement for photographic cameras. 3,805,279, Cl. 354-43.000.

Flinchum, John A.: *See—*
Scott, Robert C.; and Flinchum, John A., 3,804,353.

Flower, Leonard B.: *See—*
Okuniewski, Vincent F.; and Flower, Leonard B., 3,804,258.

FMC Corporation: *See—*
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Food Equipment, Inc.: *See—*
Dillon, Janus J., 3,803,669.

Forbes, Hampton E., Jr., to Westvaco Corporation. Reinforced multiple product carton. 3,804,321, Cl. 229-38.000.

Forest, Edward; and Keller, Carol K., to Xerox Corporation. Liquid crystal imaging system. 3,804,618, Cl. 96-1.00r.

Forney Engineering Company: *See—*
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Forshay, Richard D.: *See—*
Gunderman, Anthony J.; and Forshay, Richard D., 3,804,604.

Fortenbach, Robert W.: *See—*
Miller, Alexander, Jr.; Anderson, Victor F.; Holt, Raymond W.; and Fortenbach, Robert W., 3,804,330.

Forthmann, Frederick F., Jr. Strip material packing apparatus. 3,804,266, Cl. 214-6.0dk.

Foseco International Limited: *See—*
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Foster Grant Co., Inc.: *See—*
Papetti, Stelvio; and Ku, Ping L., 3,804,924.

Foster, Jimmie J. L.; and Schultz, Elmer J., to Collins Radio Company. Oualization means for multi-channel redundant control system. 3,805,235, Cl. 340-146.0be.

Foster, Ray W. Multiple purpose game fish landing equipment. 3,803,742, Cl. 43-4.000.

Fotland, Richard A.: *See—*
Betts, James F.; Fotland, Richard A.; and Petro, Victor P., 3,804,774.

Fourtier, Maurice Robert: *See—*
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Francik, Carl J.: *See—*
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Franckh'sche Verlagshandlung: *See—*
Nehmann, Edchar, 3,805,116.

Frank, Bruce Allen: *See—*
Frank, Bruce Allen; Miles, John Arlington; and Ahlstrom, James C., 3,805,049.

Frank, Bruce Allen; Miles, John Arlington; and Ahlstrom, James C., to Frank, Bruce Allen. Color pattern generator. 3,805,049, Cl. 240-10.00r.

Frank, Richard S., to Nuclear-Chicago Corporation. Progrramming apparatus for an automtic radioactiveity counting system. 3,805,071, Cl. 250-328.000.

Frankenberg, Henry E., to Continental Can Company, Inc. Composite closure cap. 3,804,283, Cl. 215-262.000.

Franz, Viehbock: *See—*
Higatsberger, Michael J.; Rumpold, Karl; and Franz, Viehbock, 3,805,079.

Fredrich, Otto, to Aktiengesellschaft Brown, Boveri & Cie. Electrical energy distribution system. 3,805,113, Cl. 317-27.00a.

Freeport Minerals Company: *See—*
Morris, Horton H.; and Prescot, Paul I., 3,804,937.
Morris, Horton Harold; Drexel, Richard Jacob, Jr.; and Turner, Kenneth Lamar, 3,804,653.

Freihammer, Francis A., 1/4 to Burns, John T. Fishing rod and reel. 3,803,745, Cl. 43-20.000.

Freiwald, Edward S.; and Thomson, Ronald E., to Rexnord Inc. Structurally balanced plastic conveyor chain. 3,804,232, Cl. 198-195.000.

Frenandez-Moran, Humberto. Ultra thin sectioning with ultra sharp diamond edge at ultra low temperature. 3,803,958, Cl. 83-15.000.

French, Hollis E., to Itek Corporation. Photographic reflex process. 3,804,623, Cl. 96-47.000.

Freudenberger, Dieter: *See—*
Fernholz, Hans; and Freudenberger, Dieter, 3,804,876.

Fricker, Ludwig, to Daimler-Benz Aktiengesellschaft. Fuel tank for vehicles. 3,804,291, Cl. 220-85.00r.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Schmid, Karl; Schauerte, Karlheinz; Kirchhof, Hans Werner; Gelbe, Horst; Tilgner, Hans Georg; and Wenderoth, Richard, 3,804,915.

Friedman, Harry G., to Medronic, Inc. Body implantable lead. 3,804,098, Cl. 128-404.000.

Frischmuth, Robert W., Jr.: *See—*
Arnold, Kenneth R.; and Frischmuth, Robert W., Jr., 3,804,145.

Frobenius, Wolf D., to Westinghouse Electric Corporation. Charge storage target and method of manufacture having a plurality of isolated charge storage sites. 3,805,126, Cl. 317-235.00r.

Froehlich, Alfred: *See—*
Loeffel, Hansrolf; Piller, Bernhard; and Froehlich, Alfred, 3,804,630.

Frontier Corporation: *See—*
Gust, Jacob N., 3,804,464.

Frumkin, Mikhail Evseevich: *See—*

Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,803,797.

Fryd, Michael, to Du Pont de Nemours, E. I., and Company. Cross-linked polyurethanes based on aromatic/aliphatic polyesters. 3,804,810, Cl. 260-75.0nk.

Fuchs, Franz, to Rohrs, Werner, Dr., KG. Cable guide. 3,804,372, Cl. 254-190.000.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,804,624.
Fukushima, Osamu; and Sato, Masamichi, 3,804,062.
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Sato, Masamichi; Tamai, Yasuo; Fukushima, Osamu; Matsumoto, Seiji; and Horikawa, Kazuo, 3,804,659.
Shiba, Keisuke; Kubodera, Seiiti; and Sakai, Takeo, 3,804,634.
Yazawa, Kenichiro; Arai, Fuminori; Kitajima, Masao; and Kondo, Asaji, 3,804,776.

Fuji Photo Film Company, Ltd.: *See—*
Osada, Chiaki; Satomura, Masato; and Ono, Hisatake, 3,804,628.

Fujii, Kiyonobu: *See—*
Kurashige, Hirotoshi; and Fujii, Kiyonobu, 3,804,706.

Fujimoto, Kyohei; Suyama, Nobuyuki; Hiroi, Yoshiyasu; Ito, Hideo; Haruki, Hiroshi; Ogawa, Takao; and Kobayashi, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Diverse type dipole antennas on common mount. 3,805,269, Cl. 343-794.000.

Fujitsu, Limited: *See—*
Kudo, Tatsuo; and Kurachi, Koichi, 3,805,176.
Nakamura, Hiroshi; Oyama, Hiroaki; Kato, Tadayoshi; and Miyo, Tokihiro, 3,805,173.

Fukuara, Akira: *See—*
Yanagisawa, Akira; Fukuara, Akira; and Usami, Katsuhisa, 3,805,057.

Fukuda, Kazuo: *See—*
Soejima, Kazuo; Sugahara, Takeshi; Fukuda, Kazuo; and Hashimura, Kazuya, 3,805,016.

Fukuma, Yoshitaka, to Sharp Kabushiki Kaisha. Weighting scale. 3,804,188, Cl. 177-25.000.

Fukushima, Osamu: *See—*
Sato, Masamichi; and Fukushima, Osamu, 3,804,510.
Sato, Masamichi; Tamai, Yasuo; Fukushima, Osamu; Matsumoto, Seiji; and Horikawa, Kazuo, 3,804,659.

Fukushima, Osamu; and Sato, Masamichi, to Fuji Photo Film Co., Ltd. Electrophotographic developing device. 3,804,062, Cl. 118-637.000.

Fulkerson, William: *See—*
Chang, Ji Young; Ewing, William M.; Fulkerson, William; McElroy, David L.; and Weaver, Samuel C., 3,804,928.

Fulton, Gary Richard. Tire roof. 3,803,792, Cl. 52-533.000.

Funaoka, Kuji; and Miwa, Tatsuro, to Mitsubishi Oil Co., Ltd. Paper sizing agent. 3,804,788, Cl. 210-27.00r.

Funke, Ludwig F., to Whirlpool Corporation. Compressor lubrication system. 3,804,202, Cl. 184-6.160.

Furlow, Richard H.: *See—*
Becker, James R.; and Furlow, Richard H., 3,804,759.

Furrow, Clarence L., to Phillips Petroleum Company. Isolation of polymerization grade tetrafluoroethylene. 3,804,910, Cl. 260-653.300.

Furukawa, Hiroshi: *See—*
Ogiso, Mitsutoshi; Takahashi, Kiyoshi; Furukawa, Hiroshi; and Itani, Takashi, 3,804,497.

Fushiki, Isamu: *See—*
Sakamoto, Kenro; Fushiki, Isamu; Shimizu, Fumio; and Tozawa, Katsutoshi, 3,804,633.

Futty, Robert C.: *See—*
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Fuzia, Joseph: *See—*
Marozzi, Alfred A.; and Fuzia, Joseph, 3,804,016.

GAF Corporation: *See—*
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Brachman, Armand E., 3,804,809.

Galantay, Eugene E., to Sandoz-Wander, Inc. 1-(2',4'-Disubstituted-6'-w-substituted-hexyl-1'-phenyl)-1-olefin-3-ones. 3,804,883, Cl. 260-473.00r.

Gallagher, Edward L., to A-T-O Inc. Warning device for fire protection system. 3,804,054, Cl. 116-106.000.

Gallant, George A., to Simmonds Precision Products, Inc. Phase measurement circuit. 3,805,153, Cl. 324-83.00a.

Ganiaris, Neophytos. Crystallization concentration process. 3,803,861, Cl. 62-123.000.

Gapa, John J.: *See—*
Fetscher, Charles A.; and Gapa, John J., 3,804,862.

Garbe, Siegfried, to Nilodor Company, The. Timed drop applicator. 3,804,592, Cl. 21-121.000.

Garcea, Giampaolo, to Alfa Romeo S.p.A. Automatic non-return valve. 3,804,113, Cl. 137-496.000.

Gard, Jerold H., to Kaiser Aerospace & Electronics Corporation. Multiplexed infrared imaging system. 3,804,976, Cl. 178-6.800.

Gardner, James F., to Crane Packing Company. Gap seal with thermal and pressure distortion compensation. 3,804,424, Cl. 277-27.000.

Gardner-Denver Company: *See—*
Harms, William J.; and Wing, Michael Paul, 3,803,696.

Garnett, Bruce L. Electrically operated hydraulic control valve. 3,804,120, Cl. 137-625.640.

Garnett, Jack L.: *See—*
Fallon, Herbert J.; and Garnett, Jack L., 3,803,769.

Garnier, Marcel, to Micro Mega S.A. Handpieces for dental surgery and the like. 3,803,716, Cl. 32-26.000.

Gartner, Stanley J.: *See—*
Baker, Donald J.; Gartner, Stanley J.; and Oberg, Robert S., 3,803,697.

Gas-Fired Products, Inc.: *See—*
Horne, Frank Leigh, 3,804,272.

Gascon, Martine: *See—*
Manoussos, Georges; Dossou, Koovi Gatien; and Gascon, Martine, 3,804,094.

Gaskell, Philip Hedley; Tilley, Brian Paterson; Irlam, Philip Sidney; Miller, Robert Percy; and Barry, Thomas Ian, to Pilkington Brothers Limited. Method for making glass ceramic materials. 3,804,608, Cl. 65-33.000.

Gaspar, Claude E.; Adrien, Christian; and Komorouski, Roman J., to International Standard Electric Corporation. Electrical connector. 3,805,216, Cl. 339-90.00r.

Gasparac, Rudolph J.; Pokora, Robert J.; and Sawant, Ulhas S., to Rexnord, Inc. Crusher release clearing system. 3,804,342, Cl. 241-37.000.

Gatiss, Albert Leslie, to Brockhouse Engineering Limited. Hydraulic transmission systems. 3,803,844, Cl. 60-491.000.

Gatto, Charles. Apparatus for sizing shaped articles. 3,804,574, Cl. 425-388.000.

Gaus, Walter, to Ruhrmann, Josef, Dr.-Ing. Apparatus for making plastic stops on slide fastener tape. 3,804,577, Cl. 425-109.000.

GCO, Inc.: *See—*
Neumann, Don B., 3,804,397.

Gebhart, Howard C.; and Tichy, Nick, to Emerson Electric Co. Control device. 3,803,930, Cl. 74-116.000.

Gebruder Anders & Co.: *See—*
Anders, Arthur, 3,805,026.

Gebrueder Buehler AG: *See—*
Dankesreiter, George, 3,804,250.

Geczy, Bela; and Wilms, Carl Alfred, to Jackson, Byron, Inc. Orienting apparatus for threaded well pipe. 3,803,953, Cl. 81-53.00a.

Geertsema, Eise Bernard: *See—*
Jonker, Hendrik; Moienaar, Arian; and Geertsema, Eise Bernard, 3,804,638.

Geese, Karl Heinz; Oberschiven, Hermann; and Pradel, Karl. Means for mounting a work roll on a shaft. 3,803,691, Cl. 29-200.00r.

Gehl Company: *See—*
Braunberger, Benjamin A.; and Burrough, Donald E., 3,804,279.

Gehlhaus, Paul H.: *See—*
Baldwin, Mart G.; and Gehlhaus, Paul H., 3,804,683.

Gelbe, Horst: *See—*
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Gelfand, Mikhail Lvovich; Isipenjuk, Yakov Isaakovich; Podlesnykh, Petr Ivanovich; Sergeichik, Vladimir Adamovich; Rutgaizer, Mikhail Isaakovich; and Antipov, Georgy Afanasievich. Impact wrench. 3,804,180, Cl. 173-15.000.

Gelhaar, Rolf; Nitz, Juergen; and Rau, Kurt, to Metallgesellschaft Aktiengesellschaft. Electrostatic precipitator. 3,803,809, Cl. 55-148.000.

Gelzer, John R. Wiping anvil assembly for bending component leads. 3,804,317, Cl. 227-155.000.

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Gerard, Collot, to Electronique Marcel. Airborne telemetering radar. 3,805,267, Cl. 343-7.300.
Gerber, Arthur H.; and Koch, Stanley D., to Horizons Incorporated; a division of Horizons Research Incorporated. Preparation of heterocyclic polymers from heteroaromatic tetramines. 3,804,804, Cl. 260-47.0cp.
Gerber Garment Technology, Inc.: *See—*
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Getz, Edward H.; and Marcade, Roque, to Whirlpool Corporation. Combined unbalance and end of cycle signal for automatic washers. 3,803,881, Cl. 68-12.00r.
Gewartowski, James Walter; and Tatsuguchi, Isamu, to Bell Telephone Laboratories, Incorporated. Resonance control in interdigital capacitors useful as DC breaks in diode oscillator circuits. 3,805,198, Cl. 333-73.00s.
Gewerkschaft Eisenhutte Westfalia: *See—*
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Gladrow, Elroy M., to Esso Research and Engineering Company. Hydrocarbon conversion with catalyst mixture of X and Y zeolites. 3,804,747, Cl. 208-120.000.
Glamkowski, Edward J.; Strupczewski, Joseph T.; and Wolf, Erhard H., to American Hoechst Corporation. N-phenyl-N'-dialkylphosphinylalkyl-piperazines. 3,804,836, Cl. 260-268.00k.
Gleanzer, Richard H., to McDonnell Douglas Corporation. Radiation sensitive transducer. 3,805,058, Cl. 250-203.0vt.
Glejf, Robert G., to Kinkead Industries Incorporated. Carpet adhesive spreader. 3,803,662, Cl. 15-104.00s.
Glicksman, Leon R., to Massachusetts Institute of Technology. Gas-liquid periodic heat exchanger. 3,804,155, Cl. 165-1.000.
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Goetz, Lawrence R., to Singer Company, The. Sewing machine handwheel elimination arrangement. 3,804,044, Cl. 112-220.000.
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Golyakhovsky, Fladimir Julievich. Endoprosthesis of shoulder joint. 3,803,641, Cl. 3-1.000.
Gommans, Huberts Johannes Josephus; and Stikkelbroeck, Josephus Gerardus Henricus, to U.S. Philips Corporation. Electrical connection of coaxial cable ends. 3,804,972, Cl. 174-88.00c.
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Goodfellow, Robert D.; and Busby, Donald W., to Subterranean Tools Inc. Rolling cutter and seal therefor. 3,804,425, Cl. 277-92.000.
Gooding, Chester M.; and Rowley, Horace P., to CPC International Inc. Process for production of peanut oil composition by hydrogenation and winterization. 3,804,867, Cl. 260-409.000.
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Greer, Richard R. Wave force absorbing device. 3,804,049, Cl. 114-67.00a.

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Grivas, John C., to Sherwin-Williams Company, The. Alkoxy anilines as curing agents for epoxy resins. 3,804,806, Cl. 260-47.0en.

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Gungle, Warren C., to GTE Sylvania Incorporated. High pressure electric discharge with zirconium-aluminum getter. 3,805,105, Cl. 313-25.000.

Gunn, John Battiscombe, to International Business Machines Corporation. Fluid droplet printer for graphic displays. 3,805,271, Cl. 346-75.000.

Gunn, Nathaniel I., to Federal Enterprises Inc. Incinerator. 3,804,035, Cl. 110-8.00a.

Gunther, Conrad J., to Dzus Fastener Co., Inc. Fastener assembly. 3,804,358, Cl. 248-205.00r.

Gusman, Moisei Timofeevich; Konstantinov, Leonid Pavlovich; Malkin, Boris Davidovich; Martyshin, Adolf Nikolaevich; Nikitin, Gely Meierovich; and Edelman, Yakov Alexandrovich. Core drilling apparatus. 3,804,184, Cl. 175-226.000.

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Haemmerly, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, to Institut Francais du Petrole des Carburants et Lubrifiants and Entreprise de Recherches et d'Activites Petrolieres. N-(aminoalkyl)phthalimides. 3,804,852, Cl. 260-326.00c.

Haflrer, Willi-Gunter, to Jobling, James A., & Company Limited. Plug devices. 3,804,126, Cl. 138-89.000.

Hagemann, Walter, to Sihi G.m.b.H. & Co. KG. Lateral canal pump. 3,804,547, Cl. 415-53.000.

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Hammerstein, Hanns; Reuss, Helmut; and Moisar, Erik, to Agfa-Gevaert Aktiengesellschaft. Process for the production of a stain-resistant photographic silver halide emulsion. 3,804,629, Cl. 96-94.00r.

Hammond, Ronald Wayne; Morris, Robert; Powondra, Richard Joseph; and Ross, Alexander Robert, to Bell Telephone Laboratories, Incorporated. Trunk arrangement with remote attendant facilities. 3,804,991, Cl. 179-26.000.

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Hansson, Gunnar Christer, to Atlas Copco Aktiebolag. Rotary machine with rotor axial positioning means. 3,804,562, Cl. 418-107.000.

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Harvey, Donald M., to Eastman Kodak Company. Photographic film unit. 3,804,626, Cl. 96-76.00c.
Harvey, Donald M., to Eastman Kodak Company. Film handling improvement. 3,804,627, Cl. 96-76.00c.
Hasbro Industries, Inc.: *See—*
Strongin, Ned S., 3,803,756.
Hashiguchi, Susumu; and Hino, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Magnetic recording disc using a magnetic sheet held on a stretched flexible sheet. 3,805,292, Cl. 360-135.000.
Hashimoto, Noburo: *See—*
Tokushige, Kenichi; Segawa, Toru; Uda, Kiminori; Tada, Hideho; Anodo, Teisuke; Yamamoto, Hiroya; and Hashimoto, Noburo, 3,804,684.
Hashimoto, Yasuyuki: *See—*
Torii, Osamu; Torii, Sugako; and Hashimoto, Yasuyuki, 3,804,536.
Hashimura, Kazuya: *See—*
Soejima, Kazuo; Sugahara, Takeshi; Fukuda, Kazuo; and Hashimura, Kazuya, 3,805,016.
Hasler AG: *See—*
Meyr, Heini; and Kuhne, Rudolf, 3,804,517.
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Hasselbach, William H.: *See—*
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Hasspacher, Klaus: *See—*
Ebnother, Anton; and Hasspacher, Klaus, 3,804,899.
Hatakeyama, Takanobu; and Shima, Seiya, to Hitachi, Ltd. Control system for induction motors. 3,805,133, Cl. 318-211.000.
Hattendorf, Edwin R.: *See—*
Manke, Girard M.; Tribuno, Robert; Hattendorf, Edwin R.; and Schuldt, Theodore J., Jr., 3,805,033.
Hattori, Hiroyuki: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 3,804,512.
Hausman, Earl Thomas, to RCA Corporation. Hybrid electron device containing semiconductor chips. 3,805,117, Cl. 317-101.000.
Hayakawa, Kyohei; Maeda, Hiroshi; and Habara, Noritada, to Mitsubishi Jukogyo Kabushiki Kaisha. Circuit for confirming positioning operation. 3,805,169, Cl. 328-71.000.
Hayashi, Keizo: *See—*
Nagashima, Yoshinori; Hayashi, Keizo; Inoue, Mamoru; Yamazaki, Takai; Maeda, Shinichi; Kawasaki, Shigetake; and Owa, Masaru, 3,803,860.
Hayashibara Company: *See—*
Sugimoto, Kaname; and Hirao, Mamoru, 3,804,715.
Hayashibara Company, Limited: *See—*
Okada, Shigetaka; and Higashibara, Masataka, 3,804,718.
Haynes, Richard, to Western Electric Company, Incorporated. Methods and apparatus for treating an article. 3,804,725, Cl. 204-26.000.
Hazard, Richard: *See—*
Cairns, Hugh; and Hazard, Richard, 3,804,857.
Heckelman, James D., to Research Energy of Ohio, Inc. Blasting machine. 3,805,115, Cl. 317-80.000.
Heckmanns, Heinz: *See—*
Longerich, Wilfried; Heckmanns, Heinz; and Timmerbeil, Harald, 3,804,001.
Hedeen, Nils E.; and Allin, George, Jr., to Harnischefger Corporation. Tower crane with rockable top sector. 3,804,264, Cl. 212-144.000.
Hedrich, Loren W., to Gulf Research & Development Company. Combating nutsedge with 1-methyl-4-phenylpyridinium salts. 3,804,612, Cl. 71-94.000.
Heflinger, Lee O.: *See—*
Wuerker, Ralph F.; and Heflinger, Lee O., 3,805,188.
Hehl, Karl. Covered die closing unit for injection molding machines. 3,804,003, Cl. 100-53.000.
Hehl, Karl. Apparatus for pivoting a component or a group of components of an injection mold. 3,804,576, Cl. 425-451.000.
Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Kuhnert, Hans, 3,803,680.
Heinecke, Allen F. Plant growth promoting and protection device. 3,803,759, Cl. 47-27.000.
Heise, Nyles N.: *See—*
Brooks, Everett G.; Heise, Nyles N.; Lewis, David O.; Podler, Glenn D.; and Zimmerman, Dean O., 3,805,245.
Helava, Uuno V., to Bendix Corporation, The. Method and apparatus for making holograммetric measurements. 3,803,720, Cl. 33-228.000.
Hellman, Richard F., to Universal Oil Products Company. Wrinkle-free cover for reclining seat. 3,804,457, Cl. 297-219.000.
Henderson, Miles L., to Phillips Petroleum Company. Liquid flushing for the pump seal in alkylation. 3,804,918, Cl. 260-683.580.
Hendrix, Hurshel V., to Phillips Pertoleum Company. Underground storage cavern with damage-proof tubing. 3,803,850, Cl. 61-.500.
Hendry, Robert S. Ball having internal lighting system. 3,804,411, Cl. 273-58.00g.
Henig, Yair: *See—*
Summin, Alfred S.; Daun, Henryk; Gilbert, Seymour G.; and Henig, Yair, 3,804,961.
Henkel, Erich Gustav; and Jung, Bolko, to Messrs., Henkel, E. G., Maschinenfabriken. Lasting machine. 3,803,654, Cl. 12-8.300.
Henry, James R.: *See—*
Whelan, James A.; Henry, James R.; and White, Horace H., 3,804,261.
Henson, Howard K., to Burr-Brown Research Corporation. Electronic analog multiplier. 3,805,092, Cl. 307-229.000.
Hepp, Guenter, to Koppers-Wistra-Offenbau GmbH. Pusher furnace. 3,804,584, Cl. 432-234.000.
Heraeus-Christ GmbH: *See—*
Sinn, Hartmut; and Stallmann, Hans, 3,804,324.
Hercules Incorporated: *See—*
Hurley, Eldon Kenneth, 3,804,019.
Herdman, William B.; and Sonnenberg, Charles W., to Kennedy Tank & Manufacturing Company, Inc. Tank assembly apparatus. 3,803,692, Cl. 29-200.00b.
Hermann, Eike; Otto, Bernhard; and Von Graeve, Erdmann Edler. Setting of contacts on a support. 3,803,694, Cl. 29-203.00b.
Hermann, Martin: *See—*
Ostrop, Berthold; Harhoff, Karl; Rassmann, Christoph; and Hermann, Martin, 3,804,465.
Hertl, Albert; and Iwersen, Werner. Centering device for plate rolling and lengthening mills. 3,803,899, Cl. 72-420.000.
Herziger, Gerd Bernd; and Steffen, Jurg, to Institut fur angwandte Physik der Universitat Bern and Pierres Holding S.A. Laser apparatus supported by an optical bench. 3,805,015, Cl. 219-121.001.
Hess, Robert L.; and Konohue, Edward P., to Westinghouse Electric Corporation. Resiliently-mounted blast-shield for the tank of an oil-circuit breaker. 3,805,002, Cl. 200-150.00r.
Hession, Crowley, Engineers: *See—*
Crowley, Francis X., 3,804,260.
Hewlett-Packard GmbH: *See—*
Ruttgers, Helge; and Lussem, Heribert, 3,804,080.
Hewlett-Packerd Company: *See—*
Baker, C. Mark, 3,805,255.
Heye, Hermann: *See—*
Becker, Kurt, 3,803,877.
Hickey, William E., Jr., to Tec Group, Inc., The. Fluid machine rotor. 3,804,553, Cl. 416-177.000.

Hickner, Richard A.; and Farber, Hugh A., to Dow Chemical Company, The. Polyethers having aminothioether side chains. 3,804,900, Cl. 260-584.00b.

Hidaka, Hideimasa: *See—*
Koaze, Yoshihisa; Nakajima, Yotaka; Hidaka, Hideimasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,804,717.

Higashibara, Masataka: *See—*
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Higatsberger, Michael J.; Rumpold, Karl; and Franz, Viehbock, to Osterreichische Studiengesellschaft fur Atomenergie Ges m.b.H. Apparatus for determining the carbon content of a ferrous material during steel making. 3,805,079, Cl. 250-392.000.

Higuma, Toyonori, to Kabushiki Kaisha Yashico. Motion picture camera controls. 3,804,499, Cl. 352-169.000.

Hijiya, Hiromi; and Hirao, Mamoru, to Ken Hayashibara. Polyvinyl alcohol compositions containing amylose and/or amylitol of low molecular weight. 3,804,785, Cl. 260-17.4st.

Hilker, Harry V. Stepping motor drive acceleration, deceleration control. 3,805,138, Cl. 318-696.000.

Hill, Harvey: *See—*
Szymanski, Chester D.; Tessler, Martin M.; and Hill, Harvey, 3,804,828.

Hill, John Arthur: *See—*
Coad, Peter; and Hill, John Arthur, 3,804,941.

Hill, Kenneth R., to Mallory, P. R., & Co., Inc. Method of making an organic charge transfer complex cathode. 3,804,675, Cl. 136-137.000.

Hillenbrand, George C.; and Wettering, Carl A., to Batesville Casket Company, Inc. Shirring machine. 3,804,688, Cl. 156-205.000.

Hillyer, Anthony William. Epicyclic change speed gear hubs. 3,803,947, Cl. 74-750.00b.

Hilti Akteingesellschaft: *See—*
Tauern, Dankmar; and Harder, Jarl-Max, 3,805,143.

Himes, William H., to Leyman Manufacturing Corporation. Cargo platform. 3,804,276, Cl. 214-152.000.

Hinds, Walter E.: *See—*
Tarbox, John W.; Hinds, Walter E.; and Castro, Rodolfo, 3,804,130.

Hinkley, Lester W. Drilling gauge. 3,803,722, Cl. 33-353.000.

Hinley, John James; Milne, David Graeme; and Goldsbrough, Keith, to British Titan Limited. Pigments. 3,804,655, Cl. 106-300.000.

Hino, Tetsuo: *See—*
Hashiguchi, Susumu; and Hino, Tetsuo, 3,805,292.

Hiraga, Ryozo: *See—*
Tsuda, Shin; and Hiraga, Ryozo, 3,805,155.

Hirano, Katsuhiko, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic rhythm device with start and stop controller for clock oscillator and a gate. 3,803,970, Cl. 84-1.030.

Hirao, Mamoru: *See—*
Hijiya, Hiromi; and Hirao, Mamoru, 3,804,785.
Sugimoto, Kaname; and Hirao, Mamoru, 3,804,715.

Hirata, Hiroshi, to Minolta Camera Kabushiki Kaisha. Apparatus for detecting battery voltage for D.C. micromotor equipped with speed governor. 3,804,500, Cl. 352-171.000.

Hirayama, Chikara, to United States of America, National Aeronautics and Space Administration, mesne. Glass-to-metal seals comprising relatively high expansion metals. 3,804,703, Cl. 161-196.000.

Hiroi, Yoshiyasu: *See—*
Fujimoto, Kyohei; Suyama, Nobuyuki; Hiroi, Yoshiyasu; Ito, Hideo; Haruki, Hiroshi; Ogawa, Takao; and Kobayashi, Tsutomu, 3,805,269.

Hirojoshi, Ohno: *See—*
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Hitachi, Ltd.: *See—*
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Hatakeyama, Takanobu; and Shima, Seiya, 3,805,133.
Kitanosono, Hidehiro, 3,803,887.
Kudo, Tetsuichi; Yoshida, Motoko; and Okamoto, Osamu, 3,804,674.
Matsumoto, Kuniaki; and Yamada, Shinichi, 3,805,242.
Nakamura, Toshio; Egawa, Hitoshi; Kawai, Sadaharu; and Takahashi, Koichi, 3,804,476.
Sakurai, Yo, 3,805,291.
Takahashi, Eiki; and Kamata, Yuzuru, 3,805,140.
Yanagisawa, Akira; Fukuara, Akira; and Usami, Katsuhisa, 3,805,057.

Hitco: *See—*
McGuffin, Donald W.; Larsen, Richard J.; Mitchell, Robert W.; and Caruso, Bernard E., 3,803,672.

Hobert Manufacturing Company, The: *See—*
Schuerman, Victor F.; and Engebretsen, Einar O., 3,805,084.

Hoch, Robert Ridgewood; and Porcelli, Richard Victor, to Halcon International, Inc. Process for preparing vinyl acetate. 3,804,887, Cl. 260-491.000.

Hodemalkers, Andreas Marie Laurentius, to U.S. Philips Corporation. Transistor circuit. 3,805,093, Cl. 307-235.00r.

Hoeber, Gerhard: *See—*
Niestroj, Heinrich; Landwehrkamp, Hans; and Hoeber, Gerhard, 3,803,823.

Hoefke, Wolfgang: *See—*
Losel, Walter; Merz, Herbert; Hoefke, Wolfgang; and Traunecker, Werner, 3,804,825.
Stahle, Helmut; Koppe, Herbert; Summer, Werner; and Hoefke, Wolfgang, 3,804,833.

Hoehn, Hans: *See—*
Denzel, Theodor; and Hoehn, Hans, 3,804,843.

Hoerner, Jacob W.: *See—*
Lopata, Ira, L.; Hoerner, Jacob W.; and Sloane, Theodore A., 3,804,498.

Hoesch Aktinegesellschaft: *See—*
Andree, Dietrich, 3,804,478.

Hoesch Werke Aktiengesellschaft, mesne: *See—*
Longerich, Wilfried; Heckmanns, Heinz; and Timmerbeil, Harald, 3,804,001.

Hoey, Charles E., to Rohm & Haas Company. Decorative laminate. 3,804,700, Cl. 161-160.000.

Hoffman, Gary Robert, to Bendix Corporation, The. Heterodyne amplifier circuits. 3,805,165, Cl. 325-451.000.

Hoffman, Harry Swartzlander, Jr.; and Knickmeyer, Kenton Hugh, to International Business Machines Corporation. Programmed waveform power inverter control system. 3,805,139, Cl. 321-5.000.

Hoffman, Joseph K.; and Russell, James P., to Air Products and Chemicals, Inc. Elastomers of vinyl alkanoates and alkanols and preparation thereof. 3,804,886, Cl. 260-488.00j.

Hoffmann, Clive; and McDonald, James A., to Motorola, Inc. Miniature, low voltage, low current receiver front end. 3,805,162, Cl. 325-318.000.

Hoffmann-La Roche Inc.: *See—*
O'Brien, Jay Philip; and Rachlin, Albert Israel, 3,804,905.

Hofmann, Eberhard: *See—*
Staudt, Heinrich; Hofmann, Eberhard; and Knorreck, Peter, 3,804,559.

Hogstedt, Klas Ragnar Magnus; Knutsen, Tryggve Lund; Svensson, Erik Torsten Lennart; and Osterman, Sven-Olof, to Aktiebolaget Astra Nutrition. Method and apparatus for treating fish. 3,804,964, Cl. 426-473.000.

Holbrook, Le Grand K., to Medical Development Corporation. Additive structure for vacuum operated liquid-fill bottles. 3,804,090, Cl. 128-276.000.

Hollister Incorporated: *See—*
Nolan, John L.; and Johnson, Bremen I., 3,804,091.

Holloway, Jack W., to United States of America, Navy. Ominidirectional high sensitivity hydrophone. 3,805,226, Cl. 340-10.000.

Holloway, John: *See—*
Anderson, James; Cashta, Peter; and Holloway, John, 3,803,815.

Hollstein, Hans-Wilhelm: *See—*
Horn, Jergen; Hollstein, Hans-Wilhelm; and Betker, Alexander, 3,804,196.

Holm, William J., to Riggs & Lombard, Inc. Apparatus for treating fabric. 3,803,879, Cl. 68-3.0ss.

Holman, John F., to Allegheny Ludlum Industries, Inc. Sintered porous iron article impregnated with oleic acid and an inhibitor for forming matching surfaces by friction. 3,804,600, Cl. 29-182.500.

Holmes, Frank Robert Edwin; and Tite, John, to Essex International, Inc. Wire skeining apparatus. 3,804,131, Cl. 140-92.200.

Holt, Raymond W.: *See—*
Miller, Alexander, Jr.; Anderson, Victor F.; Holt, Raymond W.; and Fortenbach, Robert W., 3,804,330.

Holton, Howard D.: *See—*
Cunningham, Arthur L.; Damon, John E.; Bohatiuk, Zenon P.; Mathai, John; and Holton, Howard D., 3,804,920.

Holzinger, Charles E.: *See—*
Golan, Kenneth F.; and Holzinger, Charles E., 3,804,191.

Homolya, James B.; and Griffin, Robert James, to United States of America, Environment Protection Agency. Sample dilution device-disc diluter. 3,803,920, Cl. 73-421.50r.

Honeywell Inc.: *See—*
Buezis, John D.; and Mucciante, Louis L., 3,804,106.
Charnley, Peter W.; and Crichton, David R., 3,803,874.
Lessler, Christian E.; Levy, Ralph M.; and McDermott, William Donald, 3,805,008.

Honeywell Information Systems Inc.: *See—*
Cooper, Stuart B., 3,804,987.
Van Allen, Larry, 3,805,232.

Honeywell Information Systems Italia: *See—*
Orlando, Luciano, 3,805,094.

Honnold, George Herbert; and Prival, Katharine Blossom, to Bell Telephone Laboratories, Incorporated. Logic controlled audio tape information system. 3,804,993, Cl. 179-100.1ps.

Hooker, John M., to General Electric Company. Electrostatic flys eye lens. 3,805,106, Cl. 313-82.000.

Horikawa, Kazuo: *See—*
Sato, Masamichi; Tamai, Yasuo; Fukushima, Osamu; Matsumoto, Seiji; and Horikawa, Kazuo, 3,804,659.

Horix Manufacturing Company: *See—*
Waxlax, Chester E., 3,804,135.

Horizons Incorporated: *See—*

Betts, James F.; Fotland, Richard A.; and Petro, Victor P., 3,804,774.

Horizons Incorporated; a division of Horizons Research Incorporated: *See—*
Gerber, Arthur H.; and Koch, Stanley D., 3,804,804.
Rose, Selwyn H.; Woo, James T. K.; and Thornton, J. Scott, 3,804,811.
Wainer, Eugene; and Quaintance, Harold J., 3,805,023.

Horn, Jergen; Hollstein, Hans-Wilhelm; and Betker, Alexander, to Schoeller & Co. KG. Noise absorbing element in block form. 3,804,196, Cl. 181-33.00g.

Horn, Michael F.: *See—*
Arnold, Orlan M.; and Horn, Michael F., 3,804,386.

Horne, Frank Leigh, to Gas-Fired Products, Inc. Method and apparatus for loading racks of tobacco leaves in curing enclosures. 3,804,272, Cl. 214-16.40r.

Horowitz, Don R.: *See—*
Litman, Alan L.; Eisenstat, Norman C.; and Horowitz, Don R., 3,805,257.

Horzick, Joseph, to Mototola, Inc. Visual indication apparatus with rotatable transparent discs. 3,803,831, Cl. 58-126.00r.

Hoschele, Gunter; Kopp, Eugen; Kroner, Heinz; and Strobl, Xaver, to Werner & Pfleiderer. Block press. 3,804,570, Cl. 425-261.000.

Hostetter, Richard S.; and Vyas, Mahesh M., to Bethlehem Steel Corporation. Method of reducing rolling mill roll wear. 3,803,888, Cl. 72-45.000.

Hottendorf, William J., to Ametek, Inc. Feeding mechanism for paperboard container handling machine. 3,804,402, Cl. 271-139.000.

House of Doors, Inc.: *See—*
Schneider, Thomas A., 3,803,718.

Householder, Roy M., to Northwestern Corporation, The. Bulk merchandise vending machine with removable cash box and single lock. 3,804,294, Cl. 221-154.000.

Houser, Philip H.: *See—*
Brady, Cyrus T.; Duffield, Peter L.; and Houser, Philip H., 3,805,273.

Howard Hardware Products, Inc.: *See—*
Howard, Joel A., 3,804,238.

Howard, Joel A., to Howard Hardware Products, Inc. Display case for sabre saw blades. 3,804,238, Cl. 206-459.000.

Howe, Warren B.: *See—*
Burger, Jack E.; Howe, Warren B.; and Kyle, William, 3,804,005.

Howell, Hilda; and Kutz, Walter M., to Koppers Company, Inc. Self-extinguishing polymer compositions containing brominated cinnamic acid esters. 3,804,783, Cl. 260-2.5fp.

Howes, John F.: *See—*
Razdan, Raj K.; Pars, Harry G.; Weinhardt, Klaus Kurt; and Howes, John F., 3,804,841.

Hoxeng, Julian S.: *See—*
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Hoy, Kenneth Look: *See—*
Bassett, David Robinson; and Hoy, Kenneth Look, 3,804,881.

Hoyer, Stourd, to Potter Instrument Company. Hammer actuating mechanism and drum design for printers. 3,804,008, Cl. 101-93.00c.

Hoyle, Geoffrey, to British Iron and Steel Research Association, The. Process for controlling position of electrode in electroslag remelting mold. 3,804,146, Cl. 164-4.000.

Hrivnak, Andrew N. Golf club. 3,804,413, Cl. 273-81.00c.

Hubbard, Harold C., to Motor Wheel Corporation. Anti-skid vehicle braking system. 3,804,999, Cl. 200-80.00r.

Hubert, Helmut; Jung, Anton Ladislaus; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Burbach, Gerhard Schmidt, to Buderus'sche Eisenwerke AG. Blower construction. 3,804,548, Cl. 415-54.000.

Hubler, Lawrence C.: *See—*
Koch, Gilbert E.; and Hubler, Lawrence C., 3,804,507.

Hudson, Joseph A., Jr., to Continental Oil Company. 1,2,3,4,7,7-Hexachloro-2-norbornene and alpha, omega-dichloroalkane telomers from octachlorocyclopentene and ethylene. 3,804,908, Cl. 260-648.00c.

Hudspeth, Thomas, to Hughes Aircraft Company. Image rejection receiver. 3,805,163, Cl. 325-437.000.

Hughes Aircraft Company: *See—*
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Scholl, Ronald F.; and Bleha, William P., Jr., 3,805,128.
Tarbox, John W.; Hinds, Walter E.; and Castro, Rodolfo, 3,804,130.

Hughes, William B.; and Zulch, Ernest A., to Phillips Petroleum Company. Rhodium and iridium NO containing compleses. 3,804,870, Cl. 260-429.00r.

Humpert, Jurgen; and Bielecke, Friedrich Wilhelm, to ITT Industries, Inc. Discharge quantity control device. 3,804,295, Cl. 222-20.000.

Humphries, Darral V.; and Kostecky, James F., to Bethlehem Steel Corporation. Pipe insulation system. 3,804,438, Cl. 285-47.000.

Hunt, Robert F., to International Paper Company, mesne. Cutter with stripper. 3,803,963, Cl. 83-116.000.

Hunt, Robert P.; and Hura, Michael, to Picker Corporation. X-ray film feed method and apparatus. 3,804,400, Cl. 271-10.000.

Hura, Michael: *See—*
Hunt, Robert P.; and Hura, Michael, 3,804,400.

Huret, Jacques Andre: *See—*
Huret, Roger Henri Marius; and Huret, Jacques Andre, 3,803,933.

Huret, Roger Henri Marius; and Huret, Jacques Andre. Gear shift device particularly for bicycles. 3,803,933, Cl. 74-217.00b.

Hurley, Eldon Kenneth, to Hercules Incorporated. Shot shell and improved wadding therefor. 3,804,019, Cl. 102-42.00r.

Hurst, George S., to University of Kentucky, The Board of trustees of the, mesne. Hand held probe for use in electrical sensing of plane coordinates. 3,804,983, Cl. 178-87.000.

Hurst, Gerald L., to Kinetics International Corporation. Method of activating ammonium nitrate prills for explosives. 3,804,929, Cl. 264-3.00c.

Hurst, Jerry C.: *See—*
Beltz, Richard K.; and Hurst, Jerry C., 3,803,709.

Husky Manufacturing & Tool Works Limited: *See—*
Rees, Herbert, 3,804,568.

Huttner, Franz. Tires for automobiles and like vehicles. 3,804,141, Cl. 152-208.000.

I-T-E Imperial Corporation: *See—*
Boney, William A., 3,805,118.

Iarossi, Frank J., to Esso Research and Engineering Company. Permanent ballast arrangement for externally insulated tankers. 3,804,050, Cl. 114-74.00a.

Ibuka, Yasuhiko: *See—*
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ICI America, Inc.: *See—*
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Rutledge, Thomas F., 3,804,865.

ICN Pharmaceuticals, Inc.: *See—*
Robins, Roland K.; and Long, Robert A., 3,804,827.

Iida, Mizuho, to Sanwa Tetsuki Kougiyou Kabushiki Kaisha. Cage apparatus rising and falling on a wall surface. 3,804,208, Cl. 187-19.000.

Iida, Toshihide: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 3,804,512.

IIT Research Institute: *See—*
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Iizuka, Haruhiko: *See—*
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Iizuka, Mitsuru: *See—*
Sakasegawa, Hiroshi; Iizuka, Mitsuru; and Senju, Takenori, 3,805,230.

Ijuin, Yasuharu: *See—*
Uehara, Hiromichi; and Ijuin, Yasuharu, 3,805,148.

Ikawa, Katsuichi; Kobayashi, Fumiaki; and Iwamoto, Kazumi, to Japan Atomic Energy Research Institute. Process for chemical vapor deposition of zirconium carbide. 3,804,664, Cl. 117-106.00c.

Ikuta, Hiroshi, to Nippondenso Co., Ltd. Automatic constant speed control system for vehicles. 3,804,193, Cl. 180-105.00e.

Illing, Henry: *See—*
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Illing, Henry, to Illing, Henry. Vortex plate for a through-fireplace. 3,804,074, Cl. 126-125.000.

Illinois Tool Works, Inc.: *See—*
Deutscher, Keith Mills, 3,803,972.
Rapata, George Martin, 3,803,973.
Toczycki, Jan, 3,803,840.

Imperial Chemical Industries Limited: *See—*
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Bowden, Roy Dennis; and Seaton, Thomas, 3,804,840.
Lewis, Cyril John; Ray, Neil Hunter; and Robinson, William Derek, 3,804,645.
Lomas, Donald, 3,804,769.
Mallion, Keith Blakeney, 3,804,847.
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Nagashima, Yoshinori; Hayashi, Keizo; Inoue, Mamoru; Yamazaki, Takai; Maeda, Shinichi; Kawasaki, Shigetake; and Owa, Masaru, 3,803,860.

Inoue, Tokuta; Nakanishi, Kiyoshi; and Kato, Kenji, to Joyota Jidosha Kogyo Kabushiki Kaisha. Exhaust emission control device for an internal combustion engine. 3,804,597, Cl. 23-288.00f.

Inoue, Tomoyuki: *See—*
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Inque, Kiyoshi, to Inoue-Japaz Research (IFR) Inc. Smoke and fire alarm system. 3,805,259, Cl. 340-237.500.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
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Ishii, Kiyoshi; Konomi, Syobu; and Ishiouro, Yoshio, to Daicel Ltd. Membrane separation process. 3,804,754, Cl. 210-23.000.
Ishii, Kiyoshi; Kojima, Katumi; and Ishikawa, Kazuo, to Darcel Ltd. Process for preparing semipermeable membranes. 3,804,932, Cl. 264-49.000.
Ishii, Takami; Inuizawa, Yoshihiro; and Kumahara, Hiromi, to UBE Industries, Ltd. Method for polymerizing formaldehyde. 3,804,808, Cl. 260-67.0fp.
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Jackson, Byron, Inc.: *See—*
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Geczy, Bela; and Wilms, Carl Alfred, 3,803,953.

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Jackson, Norman: *See—*
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Jackson, Walter D. Vocabulary game device. 3,804,419, Cl. 273-142.0ha.

Jackson, Winston J., Jr.: *See—*
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Jacobi, William I., to Schjeldahl, G. T., Company. Moveable heat sealing apparatus. 3,804,697, Cl. 156-582.000.

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Jacoby, Henry C.; Jacoby, Abraham; and Jacoby, David, to Specialty Coatings & Chemicals, Inc. Vinyl repair process. 3,804,685, Cl. 156-98.000.

Jaksch, Ernst: *See—*
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James, Doane A. Dishwashing apparatus. 3,804,104, Cl. 134-72.000.

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Jamison, Saunders E., to Celanese Corporation. Terephthalic based unsaturated polyesters. 3,804,921, Cl. 260-861.000.

Jannoni, Richard, to Blessings Corporation. Disposable headrest cover with improved attaching means. 3,804,458, Cl. 297-220.000.

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Jayachandra, Yemmanur; and Watson, Ronald G., to Western Electric Company, Incorporated. Method and apparatus for obtaining a stereoscopic termal image of internal and surface protions of an article. 3,805,073, Cl. 250-353.000.

JBF Scientific Corporation: *See—*
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Jebb, Alan: *See—*
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Jednacz, Thomas C.; and Norbeck, Dean K., to Borg-Warner Corporation. Control system for refrigeration compressor. 3,803,863, Cl. 62-209.000.

Jeffrey, Gaines Clayton; and Embrey, Wallace Eldon, to Dow Chemical Company, The. Esterification process and catalyst therefor. 3,804,884, Cl. 260-486.00b.

Jeffrey Galion Inc.: *See—*
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Jenkins, William: *See—*
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Jennings, Cedric Copeland: *See—*
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Jennings, Reuel E.; Moliterno, Louis J.; and Amend, Clifford L., to Ajax Magnethermic Corporation. Apparatus and method for heat-treating large diameter steel pipe. 3,804,390, Cl. 266-4.00e.

Jennings, Robert R., to Dow Chemical Company, The. Method for reducing polymer adsorption in secondary oil recovery operations. 3,804,173, Cl. 166-274.000.

Jervis, Graham James; and Robson, Robert, to Esso Research and Engineering Company. Antioxidants. 3,804,762, Cl. 252-50.000.

Jetromic Industries, Inc.: *See—*
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Jividen, Norman D.; and Ludka, Joseph M. Randomex, Inc. 3,803,660, Cl. Apparatus for cleaning discs.

Jobling, James A., & Company Limited: *See—*
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Jochum, Peter: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dieter, 3,804,794.

Jocoy, Kenneth P.; and Nanus, Gregory. Apparatus for controlling fingerprint identification. 3,804,524, Cl. 356-138.000.

Joeckel, Stanley V.; and Zuidema, Richard, to Irex Corporation. Electrical infrared heater with a coated silicon carbide emitter. 3,805,024, Cl. 219-553.000.

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Johnson, Peter Bennett; and Lee, Thomas Brian, to Fisons Limited. Chemical compounds. 3,804,860, Cl. 260-345.200.

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Johnson, William J. Fastener device. 3,803,670, Cl. 24-73.00p.

Johnston, Dale Montieth; and Keith, Nelson Paul, to Deere & Company. Variable elliptical and variable profile turning attachment for a lathe. 3,803,957, Cl. 82-19.000.

Johnston, Dorothy D. Chain key holder. 3,804,307, Cl. 224-28.00c.

Johnston, Lowell B. Bicycle brake lever. 3,803,937, Cl. 74-489.000.

Johnston, William G.: *See—*
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Jones, Brian Paul, to Lucas, Joseph, (Industries) Limited. Stroke control apparatus for an hydraulic pump. 3,804,554, Cl. 417-222.000.

Jones, Frank W.; and Lemmon, James D. Carton opening cutter. 3,803,713, Cl. 30-123.00r.

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Jones, Lawrence T.; and Sims, Anson, to California R. & D. Center. Two level game board apparatus. 3,804,416, Cl. 273-134.00d.

Jones, Patrick: *See—*
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Jones, Peter Denzil: *See—*
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Jonker, Hendrik; Moienaar, Arian; and Geertsema, Eise Bernard, to U.S. Philips Corporation. Electroless deposition of ductile copper. 3,804,638, Cl. 106-1.000.

Jossel, Franklin: *See—*
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Joyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Jubinot, Helmut D. Fluorescent fixture. 3,805,053, Cl. 240-51.11r.

Julia, Marc, to Rhone-Poulenc S.A. Intermediates useful in the synthesis of Vitamin A. 3,804,882, Cl. 260-470.000.

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Juntgen, Harald: *See—*
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Jurjans, Ojars, to Jetromic Industries, Inc. Liquid chemical mixing and delivery system. 3,804,297, Cl. 222-54.000.

Juro, Evan. Needlepoint blocking device. 3,803,734, Cl. 38-102.500.

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Kaiser, Walter, to Siemens Aktiengesellschaft. Circuit for attenuating spurious signals. 3,805,090, Cl. 307-215.000.
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Kanekominami, Keiji; Okuzawa, Yasutoshi; and Numata, Saburo, to Fuji Photo Film Co., Ltd. Magazine. 3,804,351, Cl. 242-199.000.
Kanzaki Paper Mfg. Co., Ltd.: *See*—
Shiozaki, Tomoharu; and Kono, Jujiro, 3,804,775.
Kaplan, Sam H., to Zenith Radio Corporation. Shadow mask blank for color cathode ray tube. 3,804,601, Cl. 29-191.000.
Kappius, Fredrich, to Siemens Aktiengesellschaft. Electrical drive arrangement for rewinding equipment. 3,805,131, Cl. 318-77.000.
Karas, John Tadeusz. Ice-making apparatus. 3,803,871, Cl. 62-348.000.
Kardos, Otto; Valayil, Silvester P.; and Arcilesi, Donald A., to M&T Chemicals Inc. Electrolyte and process for electrodepositing copper. 3,804,729, Cl. 204-52.00r.
Kargin, Valentin Alexeevich: *See*—
Samoilov, Sergei Mikhailovich; Plate, Nikolai Aefredovich; Maltsev, Vadim Vasilievich; Monastyrsky, Viktor Nikolaevich; and Kargin, Valentin Alexeevich, 3,804,816.
Karol, Joseph A., to Avco Corporation. Control system incorporating an improved three-dimensional cam arrangement. 3,803,929, Cl. 74-99.00r.
Kashio, Toshio, to Casio Computer Co. Ltd. Ink jet recording with character distortion compensation. 3,805,274, Cl. 346-75.000.
Kashirin, Alexei Petrovich: *See*—
Ryabinin, Vladimir Alexandrovich; Sadofiev, Vladimir Ivanovich; Milin, Igor Mikhailovich; Yankevich, Kira Boleslavovna; Matrosov, Evgeny Ivanovich; Leliovsky, Anton Flixovich; Terra, Larl Romanovich; and Kashirin, Alexei Petrovich, 3,805,111.
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Kato, Tetsuji; Izumi, Mikio; and Morifuji, Kazuhiko, to Mitsubishi Rayon Company Limited. Acrylic resinous composition and process therefor from a 3-stage emulsion polymerization system. 3,804,925, Cl. 260-885.000.
Kato, Tetuo: *See*—
Katsumori, Teiji; Ohsaka, Yoshisuke; and Kato, Tetuo, 3,804,216.
Katsumori, Teiji; Ohsaka, Yoshisuke; and Kato, Tetuo, to Tokico Ltd. Shock absorber and suspension mechanism. 3,804,216, Cl. 188-314.000.
Katzer, Melvin F.; and Routson, Willis G., to Dow Chemical Company, The. Slurry pump. 3,804,556, Cl. 417-39.000.
Kavanagh, Thomas S.; and Bunker, William H., to Storage Technology Corporation. Tape velocity detector. 3,805,286, Cl. 360-51.000.
Kawai, Kazuo; Shintani, Sotokichi; and Yanagindaira, Hidetaka, to Kokusai Denshin Denwa Kabushiki Kaisha. Phase-amplitude multiple digital modulation system. 3,805,191, Cl. 332-9.00r.
Kawai, Sadaharu: *See*—
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Kawamoto, Hidehiko: *See*—
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Kawamoto, Iwazo; and Kawamoto, Hidehiko. Method of making anaglyphic printing plates. 3,804,636, Cl. 96-36.300.
Kawasaki, Shigetake: *See*—
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Kazawa, Tokujiro: *See*—
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Keeler, Eugene R.; and Shapiro, Robert C., to Timex Corporation. Resistor trim for quartz oscillator. 3,803,828, Cl. 58-23.0ac.
Keijzer, Johan H.; and Pierle, Willy R. J., to Monroe Belgium N.V. Pressurized shock absorber. 3,804,217, Cl. 188-322.000.
Keith, Charles Herbert: *See*—
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Kellenbarger, Michael J. Internally propelled flywheel engine. 3,804,549, Cl. 415-80.000.
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Kendrick, Earl L.; and Sandberg, Harry W., to Du Pont de Nemours, E. I., and Company. Fluid heat exchange system. 3,804,160, Cl. 165-145.000.
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Keranen, Robert M., to Teleonic Industries, Inc. Miniature adjustable attenuator. 3,805,209, Cl. 338-76.000.
Kerr-McGee Chemical Corporation: *See—*
Coad, Peter; and Hill, John Arthur, 3,804,941.
Kerstetter, Donald R.; and Regec, John J., to GTE Sylvania Incorporated. Rapid warmup furnace for processing electron discharge device cathodes. 3,804,158, Cl. 165-61.000.
Ketterer, Richard J., to General Electric Company. Mica paper laminates. 3,804,704, Cl. 161-206.000.
Keystone Automated Equipment Co.: *See—*
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Kiemle, Horst; and Ruell, Hartwig, to Siemens Aktiengesellschaft. Device for producing a sequential, non-coherent, redundant, optical data storage. 3,805,275, Cl. 346-108.000.
Kienel, Paul A. Padded vehicle safety belt. 3,804,461, Cl. 297-385.000.
Kienzle Uhrenfabriken GmbH: *See—*
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Kilmer, Lauren G.; Lively, McCabe C.; and Reynolds, Alvin E. Print projector for fitting contact lenses. 3,804,528, Cl. 356-165.000.
Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, to Bell and Howell Company. Reversing mechanism for motion picture projectors. 3,804,501, Cl. 352-173.000.
Kimber, Ray L., Jr., to Corning Glass Works. Percolator pump and basket assembly. 3,803,998, Cl. 99-310.000.
Kimberly-Clark Corporation: *See—*
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Kimm, Otfried, to Mauser Kommanditgesellschaft. Container of synthetic plastic material. 3,804,139, Cl. 150-.500.
Kimmell, Arthur: *See—*
Larson, Willis A.; and Kimmell, Arthur, 3,805,086.
Kimura, Takashi; Nakagawa, Noboru; and Hamamoto, Hiroshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Die or mould for use in forming a rubber or plastic material. 3,804,566, Cl. 425-28.000.
Kimura, Tomiaki: *See—*
Takamiya, Tadashi; Kurata, Masaya; Kimura, Tomiaki; Hisamoto, Kazuyoshi; and Ohmura, Yasuhiro, 3,804,813.
Kindlimann, Lynn E., to Allegheny Ludlum Industries, Inc. Stainless steel by internal nitridation. 3,804,678, Cl. 148-38.000.
Kinetics International Corporation: *See—*
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King, Thomas C., III. Versatile camping tool. 3,803,648, Cl. 7-13.00b.
Kinjo, Hisao; and Okano, Keigo, to Victor Company of Japan, Ltd. Signal modulating and demodulating system with means for making the upper and lower side-bands asymmetrical. 3,805,285, Cl. 360-29.000.
Kinkead Industries Incorporated: *See—*
Glejf, Robert G., 3,803,662.
Kinloch, James C., to United States of America, Navy. Adhesively releasable and reusable shock load absorbing system. 3,804,698, Cl. 161-7.000.
Kinoshita, Kunio; and Itoh, Mitsuto, to Olympus Optical Co., Ltd. Endoscope. 3,804,081, Cl. 128-6.000.
Kirchhof, Hans Werner: *See—*
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Kise, Mearl A.; and Ellis, Leonard C., to Virginia Chemicals Inc. Sodium dithionite solution stabilization. 3,804,944, Cl. 423-265.000.
Kishi, Yasunori; Kobayashi, Junio; Yamaguchi, Masami; and Okamoto, Tsuneo, to Stanley Denki Kabishiki Kaisha. Switching oscillator controlled by a moving metal piece. 3,805,185, Cl. 331-65.000.
Kishikawa, Hiroshi; Yasuno, Kiyoshi; and Kitamura, Shuji, to Sumitomo Chemical Company, Limited. Multi-layer product having a protective layer containing a blend of polymers. 3,804,705, Cl. 161-253.000.
Kishikawa, Naoto; Kosugi, Minoru; and Iwamaru, Youichi, to Nippon Steel Corporation. Blast furnace top structure. 3,804,392, Cl. 266-31.000.
Kitajima, Masao: *See—*
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Klamka, Norbert: *See—*
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Kleemann, Manfred: *See—*
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Klein, Carl F.; and Giovanelli, Alfred, to Johnson Service Company. Transmission antenna mixer doppler motion detection. 3,805,262, Cl. 343-5.0pd.
Klein, Hans-Christof; and Werner, Gunther, to Teves, Alfred, GmbH. Method of and apparatus for measuring angular acceleration. 3,805,034, Cl. 235-150.240.
Klemp-Hans—Joachim; and Redlich, Horst, to Bildplatten, Ted, Aktiengesellschaft. Piezoelectric record cutting stylus. 3,805,100, Cl. 310-8.300.
Kling, John O., Jr. Tubing break-off and finishing tool. 3,803,895, Cl. 72-324.000.
Kljueve, Galina Vasilieva: *See—*
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Knaefel, James O.; and Robinson, Phillip E., to Parker-Hannifin Corporation. Method and apparatus for welding. 3,805,011, Cl. 219-60.00a.
Knapp, Kenneth H., to Abex Corporation. Servo actuated hydraulic transducer apparatus. 3,803,987, Cl. 91-506.000.
Knapp, William H., to International Harvester Company. Powered rotor for row crop harvesters. 3,803,820, Cl. 56-98.000.
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Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Flame resistant polymers containing amide complexes of metal salts. 3,804,800, Cl. 260-45.75r.
Knowles, William Ralph. Detection devices for image analysis systems. 3,804,979, Cl. 178-7.100.
Knutsen, Tryggve Lund: *See—*
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Koaze, Yoshihisa; Nakajima, Yotaka; Hidaka, Hideimasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, to Miejr Seika Kaisha, Ltd. Production of new amylases by cultivation of streptomyces and uss of these new amylases. 3,804,717, Cl. 195-65.000.
Kobashi, Rikiya; Nakamura, Tomohiko; and Itoi, Mikio, to Onkyo Kabushiki Kaisha. Record player. 3,804,422, Cl. 274-15.00r.
Kobayashi, Fumiaki: *See—*
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Kobayashi, Fumio; and Sasai, Koji, to Nissan Motor Company, Limited. Door latch mechanism. 3,804,441, Cl. 292-216.000.
Kobayashi, Heitaro. Ventilated seat-and-backrest structure for placement on existing seat. 3,804,462, Cl. 297-453.000.
Kobayashi, Hiroshi: *See—*
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Koch, Carl C.; and Love, Gordon Ross, to United States of America, Atomic Energy Commission. Superconductor. 3,805,119, Cl. 317-123.000.

Koch, Gilbert E.; and Hubler, Lawrence C., to Xerox Corporation. Processing control device for printing machines. 3,804,507, Cl. 355-3.000.

Koch, Stanley D.: *See—*
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Koch, William L. Insulator link. 3,804,973, Cl. 174-208.000.

Koeppe, Douglas F. Stabilized fire hose nozzle. 3,804,336, Cl. 239-383.000.

Kogan, Jury Arkadievich: *See—*
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Kojkhir, Karl Filippovich; Kogan, Jury Arkadievich; Khmelev, Vladimir Egorovich; and Krasovsky, Vladimir Yakovlevich. Method for extracting metal reinforcing piles from automobile tires and a device for accomplishing same. 3,803,693, Cl. 29-200.00d.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Kawai, Kazuo; Shintani, Sotokichi; and Yanagindaira, Hidetaka, 3,805,191.

Komatsu, Koichi, to Nissan Motor Company, Limited. Impact absorbing device using compressible liquid. 3,804,443, Cl. 293-70.000.

Komendowski, Henry, to Automatic Liquid Packaging, Inc. Container and cap construction. 3,804,282, Cl. 215-32.000.

Komline, Thomas R., Sr., to Komline-Sanderson Engineering Corporation. Process for the treatment of activated sludge. 3,803,806, Cl. 55-85.000.

Komline-Sanderson Engineering Corporation: *See—*
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Kramer, Wolfgang Wilhelm Bernhard, 3,803,736.

Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, to Canon Kabushiki Kaisha. Copying apparatus for sheet originals and thicker originals. 3,804,512, Cl. 355-25.000.

Komorouski, Roman J.: *See—*
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Konkal, John; Egbert, James; and Richards, Robert W., to La Salle Machine Tool, Inc. Single spindle mechanical feed unit. 3,803,928, Cl. 74-89.150.

Kono, Jujiro: *See—*
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Konohue, Edward P.: *See—*
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Konomi, Syobu: *See—*
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Konshin, Anatoly Sergeevich; Zenkin, Viktor Borisovich; Zatsepin, Vyacheslav Serafimovich; Arofikin, Vladislav Nikolaevich; and Trifonov, Oleg Nikolaevich. Spindle assembly. 3,804,563, Cl. 418-164.000.

Konstantinov, Leonid Pavlovich: *See—*
Gusman, Moisei Timofeevich; Konstantinov, Leonid Pavlovich; Malkin, Boris Davidovich; Martyshin, Adolf Nikolaevich; Nikitin, Gely Meierovich; and Edelman, Yakov Alexandrovich, 3,804,184.

Konuo, Shiro; and Michioto, Masao, to Alps Electric Co., Ltd. Self-illuminating switch. 3,805,004, Cl. 200-311.000.

Kopp, Eugen: *See—*
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Koppe, Herbert: *See—*
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Korb, William: *See—*
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Kornylak, Andrew To, to Kornylak Corporation. Radiation sensitive intrusion detection system. 3,805,064, Cl. 250-221.000.

Kornylak Corporation: *See—*
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Koroscie, Anthony, to American Cyanamid Company. Process for preparing a segmented linear polyurethane polymer. 3,804,812, Cl. 260-77.5am.

Kosaka, Takeshi; Murakami, Sanjiro; and Naya, Mikio. Color analyzer. 3,804,531, Cl. 356-176.000.

Koschmieder, Hartmut; Olschewski, Armin; Paschkl, Hans-Dieter; Pflugner, Wolfgang; and Rabe, Jurgen, to Industriewerk Schaeffler, OHG. Lubricating means. 3,804,203, Cl. 184-64.000.

Koslow, George. Cut-to-length machine. 3,803,962, Cl. 83-110.000.

Kostecky, James F.: *See—*
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Kosugi, Minoru: *See—*
Kishikawa, Naoto; Kosugi, Minoru; and Iwamaru, Youichi, 3,804,392.

Kotov, Vladimir Andreevich; Kvitko, Mikhail Pinievich; and Kirichinsky, Igo Ivanovich. Machine-tool for machining gear teeth. 3,803,767, Cl. 51-33.00r.

Kozlov, Alvin Germanovich: *See—*
Shkatov, Evgeny Filippovich; Zhukov, Jury Petrovich; and Kozlov, Alvin Germanovich, 3,803,911.

Kozlov, Jury Gotlibovich; Khaiilin, Adolf-Eserovich; and Lisitsina, Galina Konstantinovna. Device for preparation of a dialyzing solution. 3,804,107, Cl. 137-101.310.

Kozlov, Stanislav Fedorovich, to Fizechesky Institut Imeni P.N. Lebedria Akademii Nauk SSR. Device with a diamond detector for neutron detection. 3,805,078, Cl. 250-390.000.

Kraas, John N.; and Minott, Paul O., to Lilly, Eli, and Company. Bottle with pour out neck. 3,804,285, Cl. 215-40.000.

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Longerich, Wilfried; Heckmanns, Heinz; and Timmerbeil, Harald, to Hoesch Werke Aktiengesellschaft, mesne. Apparatus for applying baling bands around bales of compressible and expandable material. 3,804,001, Cl. 100-4.000.
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Lopata, Ira, L.; Hoerner, Jacob W.; and Sloane, Theodore A., to Ragen Precision Industries, Inc. Cassette for film. 3,804,498, Cl. 352-78.00r.
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Lorenc, Walter F.; and Berner, Roland A., to Nalco Chemical Company. Edta-organophosphonate composition for controlling scale. 3,804,770, Cl. 252-180.000.
Losel, Walter; Merz, Herbert; Hoefke, Wolfgang; and Traunecker, Werner, to Boehringer Ingelheim G.m.b.H. Carboxylic acyl derivatives of digoxin. 3,804,825, Cl. 260-210.500.
Louw, Johan August; and Ghiselin, Robert Earle, to Textron, Inc. Friction welding apparatus. 3,804,318, Cl. 228-2.000.
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Love, John J.; and Pleer, Thomas P., to Emerson Electric Co. Gas range manifold with control valve mounting means. 3,804,118, Cl. 137-608.000.
Low, David N., to Du Pont de Nemours, E. I., and Company. Process for contacting a gas with a liquid. 3,803,805, Cl. 55-73.000.
Lowe, William A. Multi-dwelling birdhouse. 3,804,066, Cl. 119-23.000.
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Metcalfe, Kenneth A.; and Lowe, William H., 3,804,660.
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Lucien, Rene; and Masclet, Jean, to Messier-Hispano. Disc-brake with heat-sink using graphite. 3,804,213, Cl. 188-73.200.
Luckey, George R., to TRW Inc. Cross mortised joint for a strain energy erectile structure. 3,803,794, Cl. 287-189.36a.
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Magnussen, Haakon T., Jr., to Spectra-Physics, Inc., mesne. Logarithmic conversion system. 3,805,046, Cl. 235-197.000.
Mahlein, Hans, to Siemens AG. Optical input coupler for a light guide. 3,804,487, Cl. 350-96.0wg.
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Maillard, Pierre, to Commissariat a l'Energie Atomique. Leak detection devices. 3,803,900, Cl. 73-23.000.
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Maquignaz, Mario; Benedetto, Bruno; and Lingeri, Antonio, to Olivetti, Ing., C., & C., S.p.A. Machine for embossing type-wheels of rollers for office machines. 3,804,006, Cl. 101-5.000.
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Marriott, Roger; and Estabrook, Mark R., to Barnes Drill Company. Magnetic separator with improved squeegee roller. 3,804,256, Cl. 210-222.000.
Marsh, Richard O., Jr. Pipe coupling. 3,804,439, Cl. 285-113.000.
Marshall, Cailen D.; and Myska, Clarence H., to Sperry-Sun Well Surveying Company. Wire line clamp. 3,804,168, Cl. 166-250.000.
Marshall, John Stephen, to Sperry Rand Limited. Hydraulic valves. 3,804,116, Cl. 137-596.000.
Marshall, John Stephen, to Sperry Rand Limited. Hydraulic valves. 3,804,123, Cl. 137-625.690.
Marshall, Robert M., to Ceilcate Company, The. Acid pickle tank covers. 3,803,996, Cl. 98-115.00r.
Martial, Jean Paul Jules, to Fabrique Nationale Herstal SA. Cocking and ejection mechanism for firearms. 3,803,740, Cl. 42-48.000.
Martin, August; and Albrecht, Ernst, to Pfaff Industriemaschinen GmbH, Firma. Sewing machine braking mechanism. 3,804,038, Cl. 112-67.000.
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Martin, John; and Johnson, Francis, to Dow Chemical Company, The. Method of preparing 1,5-disubstituted-2-haloimidazoles. 3,804,850, Cl. 260-309.000.
Martin, Joseph. Etching press. 3,804,013, Cl. 101-250.000.
Martin, William R.; and Weir, James R., to United States of America, Atomic Energy Commission. Method for inducing resistance to embrittlement by neutron irradiation and products formed thereby. 3,804,680, Cl. 148-162.000.
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Martner, John G. Ultrasonic generator and atomizer apparatus and method. 3,804,329, Cl. 239-4.000.
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Mason, Leonard, to Lee-Mason Tools Ltd. Jarring and bumping tool for use in oilfield drilling strings. 3,804,185, Cl. 175-297.000.
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Massimbene, Ernise George, to International Business Machines Corporation. Retrospective pulse modulation decoding method and apparatus. 3,805,175, Cl. 329-104.000.
Masters, Harvey M., to Westinghouse Electric Corporation. Digital data transmission system. 3,805,234, Cl. 4-16-74.
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Matson, Carl G., to Martin Engineering Company. Automatic air clamp for air-driven machine. 3,804,375, Cl. 259-1.00r.
Matsubara, Masaki, to Olympus Optical Company, Limited. Accurate lens systems for producing an extremely small image in a reduced scale. 3,804,493, Cl. 350-214.000.
Matsui, Atsushi. Graduator for surveying purposes. 3,803,721, Cl. 33-283.000.
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Matsuoka, Michio; Kobayashi, Yoshikazu; Oda, Hiroshi; and Masuyama, Takeshi, to Matsushita Electric Industrial Co., Ltd. Voltage-onolinear resistors. 3,805,114, Cl. 317-61.000.
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McAlister, Craig L. Protector for electric circuits. 3,805,208, Cl. 337-228.000.
McAlister, Roy E. Energy conversion system. 3,803,847, Cl. 60-721.000.
McAvoy, James, to Imperial Chemical Industries Limited. Oxidation of organic compounds. 3,804,906, Cl. 260-621.00g.
McCabe, James B. Vehicle hitch. 3,804,437, Cl. 280-489.000.
McCarroll, Raymond A. Automobile window vent apparatus. 3,803,994, Cl. 98-2.120.
McColl, Bruce J. Tree harvesting machine of a walking type. 3,804,137, Cl. 144-3.00d.
McConnell, William M.; Bradley, William H.; Chappell, Howard E.; and Carey, Raymond L., to Taylor-Wilson Manufacturing Company. Pipe tester. 3,803,901, Cl. 73-49.800.
McCord, Andrew T.; and Wagner, Louis E., to Chem-Trol Pollution Services, Inc. Disposal of wastes containing mercury. 3,804,751, Cl. 210-50.000.
McCormack, Harley G., to American Hydrophilics Corporation. Radioscope thickness adaptor. 3,804,523, Cl. 356-124.000.
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McHale, Myrtle B. Rug maker. 3,804,037, Cl. 112-9.000.
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McSparran, Lloyd W., to General Electric Company. Arrangement for inhibiting undesirable reverse field currents in excitation systems of traction vehicle power supplies. 3,805,144, Cl. 322-25.000.
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Melcher, Domenic. Multiplication of a binary-coded number having an even redix with a factor equal to half the radix. 3,805,042, Cl. 235-156.000.
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Meripol, Robert B., to Dresser Industries, Inc. Subsurface pump hold-down apparatus. 3,804,165, Cl. 166-206.000.
Merrill, La Vaun S., Jr.; Drayer, Dennis E.; Gogarty, William B.; and Pouska, George A., to Marathon Oil Company. Transporting hydrocarbon mixtures as a slurry. 3,804,752, Cl. 208-370.000.
Merz, Herbert: *See—*
Losel, Walter; Merz, Herbert; Hoefke, Wolfgang; and Traunecker, Werner, 3,804,825.
Merz, Werner. Developing apparatus for photographic materials. 3,804,379, Cl. 259-81.00r.
Mesnel, Francois Pierre, to Etablissements Mesnel. Sealing arrangement for vehicle doors. 3,803,766, Cl. 49-484.000.
Messenger, Joseph U., to Mobil Oil Corporation. Process of treating a well using a lightweight cement. 3,804,058, Cl. 166-292.000.
Messer Griesheim GmbH: *See—*
Klehrmann, Jurgen; and Duesberg, Wilfried, 3,803,859.
Messerschmitt-Bolkow-Blohm GmbH: *See—*
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Messier-Hispano: *See—*
Lucien, Rene; and Masclet, Jean, 3,804,213.
Messing, Ralph A., to Corning Glass Works. Adsorbing and crosslinking enzymes within the pores of porous glass. 3,804,719, Cl. 195-68.000.
Messrs., Henkel, E. G., Maschinenfabriken: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
Gelhaar, Rolf; Nitz, Juergen; and Rau, Kurt, 3,803,809.
Schmalfeld, Paul; Bock, Burkhard; and Schilling, Hans-Dieter, 3,804,581.
Metcalfe, Kenneth A.; and Lowe, William H. Method of improving development of xerographic images. 3,804,658, Cl. 117-37.0le.
Metcalfe, Kenneth A.; and Lowe, William H., to Commonwealth of Australia, The. Dielectric recording on insulator surfaces. 3,804,660, Cl. 117-37.0le.
Meteor AG: *See—*
Angst, Walter, 3,804,347.
Mettler Instrumente AG: *See—*
Kupper, Walter; and Rufenacht, Bruno, 3,804,530.
Meurer, Horst: *See—*
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Meyer, Edward: *See—*
Ruhl, Charles A. H.; Meyer, Edward; and Chatterjea, Probir K., 3,804,122.
Meyer, Heinz F., to Upjohn Company, The. Process of recurring spectinomysin. 3,804,858, Cl. 260-340.300.
Meyer, Roy E.; Wahl, John F.; and Walton, William M., to Wahl Clipper Corporation. Electric hair clipper with permanent magnet motor. 3,805,136, Cl. 318-331.000.
Meyr, Heini; and Kuhne, Rudolf, to Hasler AG. Measurement of velocity of a body. 3,804,517, Cl. 356-28.000.
Meyr, Heini, to Hasler AG. Measurement of the velocity of a body. 3,804,518, Cl. 356-28.000.
Mezincescu, Mihai: *See—*
Brinzei, Adrian; and Mezincescu, Mihai, 3,804,387.
Michaud, Jimmie A.; and Stroman, Jack R., to Bendix Corporation, The. Bulk storage and automatic presenter system with image producing means. 3,804,270, Cl. 214-16.00b.

Michaud, Jimmie A.; and Stroman, Jack R., to Bendix Corporation, The. Arrangement for a columnar display of veriation gaging signals. 3,805,036, Cl. 235-151.320.

Michel, Rupprecht, to Kraftwerk Union Aktiengesellschaft. Large flow-through boiler. 3,804,070, Cl. 122-406.00s.

Michioto, Masao: *See—*
Konuo, Shiro; and Michioto, Masao, 3,805,004.

Michon, Gerald J.; and Eichelberger, Charles W., to General Electric Company. Method and apparatus for sensing radiation and providing electrical readout. 3,805,062, Cl. 250-211.00j.

Michurov, Jury Ivanovich: *See—*
Liakumovich, Alexandr Grigorievich; Linkov, Alexei Dmitrievich; Rutman, Grigory Iosifovich; Michurov, Jury Ivanovich; Belgorodsky, Izrail Markovich; Sire, Efim Moiseevich; and Pantukh, Boris Izrailevich, 3,804,911.

Mickas, George, to Ex-Cell-O Corporation. Machining apparatus with automatic tool changing means. 3,804,426, Cl. 279-103.000.

Micro Mega S.A.: *See—*
Garnier, Marcel, 3,803,716.

Microdot, Inc.: *See—*
Moore, Marvin W., 3,805,211.

Miejr Seika Kaisha, Ltd.: *See—*
Koaze, Yoshihisa; Nakajima, Yotaka; Hidaka, Hideimasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,804,717.

Mihajlov, Vsevolod S.; and Carreira, Leonard M. Photoelectrophoretic apparatus for heat facing an image. 3,804,508, Cl. 355-3.000.

Mikotin, Alexandr Emelyanovich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Alexandr Emelyanovich; Nikolaenko, Evgeny Gritorievich; Sepanov, Grigory Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,804,151.

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Miletto, Andre: *See—*
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Milin, Igor Mikhailovich: *See—*
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Millauer, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of pentafluoroethyl iodide. 3,804,909, Cl. 260-653.700.

Miller, Alexander, Jr.; Anderson, Victor F.; Holt, Raymond W.; and Fortenbach, Robert W., to Shell Oil Company. Vapor releasing device. 3,804,330, Cl. 239-34.000.

Miller, Anton Johann, to Bell Telephone Laboratories, Incorporated. Technique for correcting the crystallographic orientation angle of crystals by the formation of mesas and double face lapping. 3,803,774, Cl. 51-283.000.

Miller, Arthur, to RCA Corporation. Adaptive surface wave devices. 3,805,195, Cl. 333-30.00r.

Miller, Carl K.: *See—*
Miller, Robert C.; and Miller, Carl K., 3,804,115.

Miller, Dolpn S. System of firefighting and blow-out protection for a drilling operation. 3,804,175, Cl. 169-46.000.

Miller, Gordon R., to Dow Chemical Company, The. Process for the preparation of thin polyurethane foams and laminates. 3,804,931, Cl. 264-47.000.

Miller, Robert C.; and Miller, Carl K., to Borg-Warner Corporation. Air supply manifold for a hydrotherapy treatment system. 3,804,115, Cl. 137-525.000.

Miller, Robert Percy: *See—*
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Millmaster Onyx Corporation: *See—*
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Mills, Ivor W.; and Dimeler, Glenn R., to Sun Oil Company. Process for producing blended petroleum oil. 3,804,743, Cl. 208-190.000.

Mills, King L., to Phillips Petroleum Company. Carbon black filtration process and apparatus. 3,803,807, Cl. 55-96.000.

Mills, Noel; and Warley, Geoffrey Peter, to Westland Aircraft Limited. Winch mechanism. 3,804,371, Cl. 254-186.00r.

Milne, David Graeme: *See—*
Hinley, John James; Milne, David Graeme; and Goldsbrough, Keith, 3,804,655.

Milz, Wendell C.; and Johnston, William G., to Aluminum Company of America. Forging lubricant. 3,804,761, Cl. 252-30.000.

Minchhoff, Paul Joseph: *See—*
Demler, Henry William, Sr.; and Minchhoff, Paul Joseph, 3,805,214.

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Miner Enterprises, Inc.: *See—*
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Mingasson, George Raymond Henry; and Domergue, Annick Marthe Suzanne Simone, to Ugine Kuhlmann. Alkoxynaphalimidothiazolium salts, useful as optical bleaching agents. 3,804,837, Cl. 260-270.00r.

Mingasson, Georges Raymond Henry; and Domergue, Annick Marthe Suzanne Simone, to Ugine Kuhlmann. Alkoxynaphthalimido-1,2,4-triazolium salts useful as optical bleaching agents. 3,804,838, Cl. 260-270.00r.

Minnesota Mining and Manufacturing Company: *See—*
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Minolta Camera Kabushiki Kaisha: *See—*
Hirata, Hiroshi, 3,804,500.
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Minott, Paul O.: *See—*
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Miscovich, John A., to Marcona Corporation. Method and apparatus for washing and sizing materials. 3,804,247, Cl. 209-273.000.

Mitchell, Fred: *See—*
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Mitchell, Robert W.: *See—*
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Mitchell, Steven D.: *See—*
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Mitjushov, Viktor Alexandrovich: *See—*
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Mitka, Boleslaw: *See—*
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Mitsubishi Chemical Industries Limited: *See—*
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Endo, Takashi; and Yamashita, Riichiro, 3,803,908.
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Mitsubishi Oil Co., Ltd.: *See—*
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Mitsubishi Rayon Company Limited: *See—*
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Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Nagashima, Yoshinori; Hayashi, Keizo; Inoue, Mamoru; Yamazaki, Takai; Maeda, Shinichi; Kawasaki, Shigetake; and Owa, Masaru, 3,803,860.

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Miyamoto, Koichi: *See—*
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Miyo, Tokihiro: *See—*
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Mo och Domsjo AB: *See—*
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Mobil Oil Corporation: *See—*
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Messenger, Joseph U., 3,804,058.
Wilson, Robert C., Jr., 3,804,780.

Moergeli, Eduard; and Winkler, Rudolf, to Ciba-Geigy AG. Process for the manufacture of 1-bromo-4-acylaminoanthraquinones. 3,804,863, Cl. 260-377.000.

Moffitt, John G., to International Telephone and Telegraph Corporation. Meat sampling device. 3,804,343, Cl. 241-37.500.

Mohr, Hans Jacob. Microwave harmonic filter employing cascaded alternate E-plane and H-plane T-junctions. 3,805,193, Cl. 333-6.000.

Mohr, Theodor O.: *See—*
Drangeid, Karsten E.; Mohr, Theodor O.; Statz, Horst F.; and Von Muench, Waldemar, 3,804,681.

Mohr, William C.; and Francik, Carl J., to Beloit Corporation. Papermaking press with inflatable rolls having thin deformable outer shells. 3,804,707, Cl. 162-358.000.

Moienaar, Arian: *See—*
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Moisar, Erik: *See—*
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Mola, Michel: *See—*
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Moliterno, Louis J.: *See—*
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Molvar, Henry E., Jr.: *See—*
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Molzer, Peter: *See—*
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Monastyrsky, Viktor Nikolaevich: *See—*

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Monfarts, A.: *See—*
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Monier Research & Development Pty., Ltd.: *See—*
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Monon Trailer Inc.: *See—*
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Monroe Belgium N.V.: *See—*
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Monroe, George A.: *See—*
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Monsanto Company: *See—*
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Montecatini Edison S.p.A.: *See—*
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Monteith, William, 25% to Goodman, Alan, Korb, William and Godschalk, Louis. Collector insulating boot. 3,804,996, Cl. 191-1.000.

Montgomery, Ian David, to Canada Wire and Cable Company Limited. Welding of hollow core aluminum conductors. 3,803,703, Cl. 29-491.000.

Montgomery, Robert M.; Young, Eddie H., Jr.; and Johnson, Richard H., to Harris-Intertype Corporation, mesne. Pulse modulation and cavity dumping lasers. 3,804,490, Cl. 350-161.000.

Monti, Giancarlo: *See—*
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Moore, Albert C.: *See—*
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Moore, Alvin Edward. Tubular buoy. 3,803,651, Cl. 9-8.00r.

Moore, Cecil L.; and Neyens, Timothy A., to McDonald, A. Y., Mfg. Co. Cap for storage vessels. 3,804,284, Cl. 215-272.000.

Moore, Geoffrey James, to Imperial Chemical Industries Limited. Manufacture of bipyridyls. 3,804,845, Cl. 260-296.00d.

Moore, John, to General Electric Company. System for the introduction of coolant into open-circuit cooled turbine buckets. 3,804,551, Cl. 416-97.000.

Moore, Lee C., Corporation: *See—*
Donnally, Robert B., 3,803,780.

Moore, Marvin W., to Microdot, Inc. Plastic lamp socket with latched insert. 3,805,211, Cl. 335-14.00r.

Moore, Warren A.: *See—*
Schuller, Fredrick T.; and Moore, Warren A., 3,804,472.

Mordhorst, Hans, to West Coast Concrete Supply Ltd. Mobile storage apparatus for use with concrete mixing plants. 3,804,463, Cl. 298-8.00t.

Moreno, Angel. Snow-melting truck with discharge means. 3,803,732, Cl. 37-12.000.

Morgan, Edward J., to Brunswick Corporation. Check valve. 3,804,114, Cl. 137-515.500.

Morgan, Myron; Mitchell, Steven D.; and Platt, Conrad R., to Aerojet-General Corporation. Apparatus and method of terminating thrust of a rocket motor. 3,803,838, Cl. 60-254.000.

Morgan, Paul Winthrop, to Du Pont de Nemours, E. I., and Company. Polyamide spinning dope. 3,804,791, Cl. 260-30.80r.

Morifuji, Kazuhiko: *See—*
Kato, Tetsuji; Izumi, Mikio; and Morifuji, Kazuhiko, 3,804,925.

Morokuma, Tadashi; and Kazawa, Tokujiro, to Olympus Optical Company, Limited. Multilayer reflection proof film. 3,804,491, Cl. 350-164.000.

Morris, Charles W.: *See—*
Wengrow, Henry R.; Stoufer, Wilmer B.; Morris, Charles W.; Leavens, Dwight E.; and Watkins, Gerald S., 3,804,819.

Morris, Floyd D.; and Rich, Barry S., to Ultronic Systems Corporation. Data processing printout system. 3,805,248, Cl. 340-172.500.

Morris, Floyd D.; and Rich, Barry, S., to Ultronic Systems Corporation. Data processing apparatus for a printing system. 3,805,251, Cl. 340-172.500.

Morris, Floyd D.; and Rich, Barry S., to Ultronic Systems Corporation. Full message erase apparatus for a data processing printout system. 3,805,252, Cl. 340-172.500.

Morris, Horton H.; and Prescot, Paul I., to Freeport Minerals Company. Process for producing an opaque inorganic-organo titanate polymeric film. 3,804,937, Cl. 264-211.000.

Morris, Horton Harold; Drexel, Richard Jacob, Jr.; and Turner, Kenneth Lamar, to Freeport Minerals Company. Adhesive. 3,804,653, Cl. 106-124.000.

Morris, Peter Alan: *See—*
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Morris, Robert: *See—*
Hammond, Ronald Wayne; Morris, Robert; Powondra, Richard Joseph; and Ross, Alexander Robert, 3,804,991.

Morse, Donald B.; and Pribish, Bernard A., to Kemlite Corporation. Machine for trimming the edges of panels. 3,803,964, Cl. 83-154.000.

Morton, Maurice: *See—*
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Morton, Roger Roy Adams, to Bausch & Lomb Incorporated. Methods of and apparatus for determining the quantity and physical parameters of objects. 3,805,028, Cl. 235-92.0pc.

Morton-Norwich Products, Inc.: *See—*
Johnson, Roland N.; and Andersen, Jon A., 3,804,888.

Mosser, Ignaz, to Vereinigte Matellwerke Ranshofen-Berndorf AG. Induction furnace. 3,804,968, Cl. 13-27.000.

Mosterd, Jacob Hendrik. Device for packing objects in a bag. 3,803,799, Cl. 53-187.000.

Moto Meter GmbH, mesne: *See—*
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Motor Wheel Corporation: *See—*
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Motorola, Inc.: *See—*
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Mototola, Inc.: *See—*
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Moulding, Kenneth William, to U.S. Philips Corporation. Circuit wiring arrangements. 3,805,194, Cl. 333-25.000.

Moutarde, Robert: *See—*
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MPL, Inc.: *See—*
Tischinger, Edward A., 3,803,700.

Mrak, Dusan, to Scovill Manufacturing Company. Method of transferring and directing the darts in a dress pattern. 3,803,717, Cl. 33-17.00r.

Mucciante, Louis L.: *See—*
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Mueller, Johannes: *See—*
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Muenchinger, Herman G., to Research Engineering and Manufacturing, Inc. Self-thread forming threaded fasteners and method for making same. 3,803,889, Cl. 72-88.000.

Muhn, Robert A., to Tuthill Pump Company. Ball joint and method of fabrication. 3,803,685, Cl. 29-149.50b.

Muller, John G. Pressurized rubber for absorbing impact energy. 3,804,395, Cl. 267-140.000.

Mulligan, William L., to Parks-Cramer Company. Radiation sensitive ends down detecting apparatus and method. 3,803,822, Cl. 57-34.00r.

Munson, Robert E.: *See—*
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Muntzer, Emile; and Muntzer, Paul, to WIBAU, Westdeutsche Industrie- und Strassenbau-Maschinen-Gesellschaft m.b.H. Materials having hydrophobic and oleophilic characteristics and method for preparing. 3,804,661, Cl. 117-622.000.

Muntzer, Paul: *See—*
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Murakami, Sanjiro: *See—*
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Murakami, Sanjiro; and Kawata, Haruhisa, to Minolta Camera Kabushiki Kaisha. Detecting device for focusing in optical instrument. 3,805,063, Cl. 250-212.000.

Murphy, John C., to Avco Corporation. Self-pulsing transmitter for vehicle tire pressure indication system. 3,805,229, Cl. 340-58.000.

Murphy, John E. Direct current resistance scale expander. 3,805,151, Cl. 324-62.000.

Murphy, Thomas J.; and Wilson, Donald M., to International Business Machines Corporation. Method of gas panel construction. 3,804,609, Cl. 65-59.000.

Murray, Jerome L. Portable power accessory with water bath for noise suppression. 3,805,082, Cl. 290-1.000.

Musashi, Akira: *See—*
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Musyakin, Vyacheslav Egorovich: *See—*
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Mutschler, Otto, to Staedtler, J. S. Nib of plastics material for tubular nib-type pens. 3,804,540, Cl. 401-265.000.

Myers, Gary A.; and Wunderlich, Donald K., to Atlantic Richfield Company. Shale oil treatment. 3,804,750, Cl. 208-253.000.

Myska, Clarence H.: *See—*
Marshall, Cailen D.; and Myska, Clarence H., 3,804,168.

Nadella: *See—*
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Nagasawa, Masahiro; and Watanabe, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Stannic oxide photoconductive device for detecting ultraviolet light and method for making the same. 3,805,124, Cl. 317-234.00r.

Nagashima, Yoshinori; Hayashi, Keizo; Inoue, Mamoru; Yamazaki, Takai; Maeda, Shinichi; Kawasaki, Shigetake; and Owa, Masaru, to Mitsui Shipbuilding and Engineering Co., Ltd. Freeze process for making fresh water from brine. 3,803,860, Cl. 62-58.000.

Nagata, Yasunori: *See—*
Ishizawa, Kazutomo; Nagata, Yasunori; Ito, Hirotaka; Ishida, Toyotaka; Koide, Tohru; and Sato, Akio, 3,803,826.

Naito, Morikazu, to Nippondenso Co., Ltd. Electromagnetic pump. 3,804,558, Cl. 417-417.000.

Naito, Okito: *See—*
Tsuruishi, Yuki; Naito, Okito; and Matsuzawa, Masanao, 3,803,829.

Nakagawa, Noboru: *See—*

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Nakajima, Yotaka: *See—*
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Nakamura, Hiroshi; Oyama, Hiroaki; Kato, Tadayoshi; and Miyo, Tokihiro, to Fujitsu Limited. Band pass filter and phase control circuit eliminating phase differneces between input and output. 3,805,173, Cl. 328-155.000.

Nakamura, Tomohiko: *See—*
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Nakamura, Toshio; Egawa, Hitoshi; Kawai, Sadaharu; and Takahashi, Koichi, to Hitachi, Ltd. Bearing devices for rotary machines. 3,804,476, Cl. 308-187.000.

Nakanishi, Kiyoshi: *See—*
Inoue, Tokuta; Nakanishi, Kiyoshi; and Kato, Kenji, 3,804,597.

Nakano, Hirofumi; and Suzuki, Takeo, to Kyowa Hakko Kogyo Co., Ltd. Process for the preparation of N-acyldopa. 3,804,893, Cl. 260-519.000.

Nalco Chemical Company: *See—*
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Shepard, John C., Jr., 3,804,872.

Nalleka, Walter H. Inmow dipper. 3,803,743, Cl. 43-4.000.

Nanus, Gregory: *See—*
Jocoy, Kenneth P.; and Nanus, Gregory, 3,804,524.

Narita, Kenichi; and Yoshizawa, Shiuji. Receiver for remote controlling a shutter of a camera. 3,805,281, Cl. 354-81.000.

Nash, Charles D.; and Beauford, Martin Henry, to Telex Corporation, The. Digital pulse generator with automatic duty cycle control. 3,805,167, Cl. 328-61.000.

Nasta Industries, Inc.: *See—*
Spiegel, Norman, 3,805,050.

National Cash Register Company, The: *See—*
Farber, Sheldon, 3,804,855.
O'Connor, James E., 3,804,689.

National Mine Service Company: *See—*
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National Research Development Corporation: *See—*
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National Starch and Chemical Corporation: *See—*
Szymanski, Chester D.; Tessler, Martin M.; and Hill, Harvey, 3,804,828.

Naya, Mikio: *See—*
Kosaka, Takeshi; Murakami, Sanjiro; and Naya, Mikio, 3,804,531.

Nazionale Cogne S.p.A.: *See—*
Einaudi, Mario, 3,803,825.

Neal, Julian E., 25% to Mitchell, Fred. Spring-loaded double-acting fishhook. 3,803,748, Cl. 43-36.000.

Nehmann, Edchar, to Franckh'sche Verlagshandlung. Chassis for supporting removabel circuit components of temporary electric or electronic circuits. 3,805,116, Cl. 317-99.000.

Nelsen, Gordon E.: *See—*
Erling, Frank H.; Nelsen, Gordon E.; and Bearfield, Clair A., 3,803,642.

Nelson, Gerald V.; and Wray, Glenn C., to Texaco Inc. Desulfurization process. 3,804,748, Cl. 208-211.000.

Nelson, Sidney P.: *See—*
Watson, John H.; Nelson, Sidney P.; and Sawyer, Thomas E., 3,804,286.

Nepodal, Frantisek: *See—*
Cermak, Milan; and Nepodal, Frantisek, 3,803,896.

Neumann, Charles G.; Krueger, Harvey R.; and Panock, Walter, to Reynolds Products, Inc. Plate type ice maker. 3,803,869, Cl. 62-32.00u.

Neumann, Don B., to GCO, Inc. Automatic positioning vacuum cup. 3,804,397, Cl. 269-21.000.

Newerowski, Vieno A. Mattress with integral bumper. 3,803,646, Cl. 5-345.00r.

Newey Goodman Limited: *See—*
Simpson, William Leslie, 3,804,039.

Newman, James W.; and Bavaro, Nicholas M., to Windings, Inc. Method of forming and packaging flexible material with an inner end payout. 3,803,796, Cl. 53-21.0fw.

Newman, John S.: *See—*
Bennion, Douglas N.; and Newman, John S., 3,804,733.

Newton, Alwin B., to Borg-Warner Corporation. Refrigeration control system. 3,803,865, Cl. 62-217.000.

Neyens, Timothy A.: *See—*
Moore, Cecil L.; and Neyens, Timothy A., 3,804,284.

Nichols, Roy Francis, Jr., to General Electric Company. Paper base laminates and method for the manufacture thereof. 3,804,693, Cl. 156-330.000.

Nicks, Peter Francis; Jones, Gladys Mary; and Baker, Alan Stuart, to Imperial Chemical Industries Limited. Paint compositions which are emulsifiable in aqueous detergent. 3,804,787, Cl. 260-22.00r.

Nielsen Engineering & Research, Inc.: *See—*
Erickson, Albert L., 3,804,210.

Niestroj, Heinrich; Landwehrkamp, Hans; and Hoeber, Gerhard, to Schubert & Salzer Maschinenfabrik Aktieng:sellschaft. Control apparatus for textile machinery. 3,803,823, Cl. 57-34.00r.

Niida, Taro: *See—*
Koaze, Yoshihisa; Nakajima, Yotaka; Hidaka, Hideimasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,804,717.

Nikitin, Gely Meierovich: *See—*
Gusman, Moisei Timofeevich; Konstantinov, Leonid Pavlovich; Malkin, Boris Davidovich; Martyshin, Adolf Nikolaevich; Nikitin, Gely Meierovich; and Edelman, Yakov Alexandrovich, 3,804,184.

Nikolaenko, Evgeny Gritorievich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Alexandr Emelyanovich; Nikolaenko, Evgeny Gritorievich; Sepanov, Grigory Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,804,151.

Nilodor Company, The: *See—*
Garbe, Siegfried, 3,804,592.

Nilson, Wesley Gordon, to United Nuclear Corporation. Nuclear reactor fuel rod. 3,804,708, Cl. 176-68.000.

Nilsson, Gert; and Oberg, Mats, to AB Farad. Ultrasonic detector. 3,805,223, Cl. 340-3.00r.

Nippon Electric Company, Limited: *See—*
Matsuo, Yoshio, 3,804,985.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hirano, Katsuhiko, 3,803,970.
Izuta, Tadao, 3,804,072.

Nippon Oil and Fats Co., Ltd.: *See—*
Soejima, Kazuo; Sugahara, Takeshi; Fukuda, Kazuo; and Hashimura, Kazuya, 3,805,016.

Nippon Soda Co., Ltd.: *See—*
Suzuki, Hisao; Musashi, Akira; and Inoue, Tomoyuki, 3,804,923.

Nippon Steel Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
Ikuta, Hiroshi, 3,804,193.
Naito, Morikazu, 3,804,558.
Suda, Toshi; and Omori, Norio, 3,804,385.
Wakamatsu, Hisato; and Amaki, Masami, 3,804,986.
Yamaguchi, Terumoto; and Izumi, Kanemichi, 3,803,892.

Nishikawa, Takehiko; Ito, Shinya; and Ibuka, Yasuhiko, to Kabushiki Kaisha Takai Rika Denki Seisokusho. Floor-type gear-shift lever position indication arrangement for use in a motor-vehicle. 3,804,055, Cl. 116-124.00r.

Nishina, Shingo, to Numata, Yehan. Height gauge comprising a counter and a dial guage. 3,803,719, Cl. 33-172.00r.

Nissan Motor Comapny, Limited: *See—*
Sakasegawa, Hiroshi; Iizuka, Mitsuru; and Senju, Takenori, 3,805,230.

Nissan Motor Company, Limited: *See—*
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Nitta, Yoshifumi: *See—*
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Nitto Kohki Co., Ltd.: *See—*
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Nitz, Juergen: *See—*
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Niwa, Tomizo: *See—*
Koaze, Yoshihisa; Nakajima, Yotaka; Hidaka, Hideimasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,804,717.

Nobilium Products, Inc.: *See—*
Perry, Eric, 3,804,344.

Noda, Nobuhiro; and Shimoda, Mitsuhiko, to Asahi Kagaku Kogyo Kabushiki Kaisha. Photometric indication circuit for battery checking. 3,804,520, Cl. 356-72.000.

Noeske, Heinz; Feichtinger, Hans; and Falbe, Jurgen, to Ruhrchemie Aktiengesellschaft. Process for the production of tertiary amines. 3,804,901, Cl. 260-585.00b.

Nofsinger, Ralph G.: *See—*
West, Herman H.; and Nofsinger, Ralph G., 3,804,484.

Noiles, Douglas G., to United States Surgical Corporation. Flow meter for parenteral solutions. 3,803,914, Cl. 73-209.000.

Nolan, John L.; and Johnson, Bremen L., to Hollister Incorporated. Ostomy appliance. 3,804,091, Cl. 128-283.000.

Nora International Company: *See—*
Welch, Cletus N., 3,804,740.

Norandex, Inc.: *See—*
Lehe, Russell B.; and Torbeti, Richard L., 3,804,067.

Norbeck, Dean K.: *See—*
Jednacz, Thomas C.; and Norbeck, Dean K., 3,803,863.

Norman, Telper E. Liner for grinding mills. 3,804,346, Cl. 241-182.000.

North American Rockwell Corporation: *See—*
Sivaslian, Armen H., 3,804,394.

North Pacific Canners & Packers, Inc.: *See—*
Bilz, William F., 3,804,000.

Northwestern Corporation, The: *See—*
Householder, Roy M., 3,804,294.

Norton, David C., to Avco Corporation. Safing and arming system for a projectile fuze and fluidic control means for use therewith. 3,804,020, Cl. 102-81.000.

Norton, Don S. Anchor adapter bracket. 3,804,051, Cl. 114-210.000.

Norton, John A. P.; McLaughlan, Thomas A.; and Kusec, Davor J., to Canadian Patents and Development, Limited. Wood slope of grain indicator. 3,805,156, Cl. 324-61.00r.

Nose, Jiro. Chair with indexing supports. 3,804,459, Cl. 297-258.000.

Nouailles, Noel: *See—*
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Novak, Samuil Yakovlevich: *See—*
Chistov, Vladimir Semenovich; and Novak, Samuil Yakovlevich, 3,804,545.

Novo Terapeutiok Laboratorium A/S: *See—*
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Nowak, Herbert: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,804,839.

Nowak, Leon J., to Rheem Manufacturing Company. Non-metallic heat exchanger. 3,804,161, Cl. 165-158.000.

Noyawa, Kouji, to Nissan Motor Company, Limited. Anti-backlash gearing system. 3,803,935, Cl. 74-409.000.

Nozaki, Michio B., to Rheem International, Inc., mesne. Cooling sleeve for shaft and bearing for high temperature gas moving system. 3,804,073, Cl. 126-112.000.

Nu-Concept Computer Systems, Inc.: *See—*
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Nuclear Power Group Limited, The: *See—*
Pettinger, Donald Stanley; and Roberts, Geoffrey Alfred, 3,804,711.

Nuclear-Chicago Corporation: *See—*
Frank, Richard S., 3,805,071.

Numata, Saburo: *See—*
Kanekominami, Keiji; Okuzawa, Yasutoshi; and Numata, Saburo, 3,804,351.

Numata, Yehan: *See—*
Nishina, Shingo, 3,803,719.

Nunley, Dan. Holder for trotline fishhooks. 3,803,750, Cl. 43-54.50a.

Nygaard, Tore: *See—*
Sandvist, Hugo; and Nygaard, Tore, 3,805,001.

Nyman, Bengt E.; and Becker, Larry T., to Sundstrand Corporation. Hydromechanical transmission. 3,803,843, Cl. 60-445.000.

Oanoski, Florian Bernard, to ICI America, Inc. Initiator and blasting cap. 3,804,018, Cl. 102-28.00m.

Oberg, Mats: *See—*
Nilsson, Gert; and Oberg, Mats, 3,805,223.

Oberg, Robert S.: *See—*
Baker, Donald J.; Gartner, Stanley J.; and Oberg, Robert S., 3,803,697.

Oberschiven, Hermann: *See—*
Geese, Karl Heinz; Oberschiven, Hermann; and Pradel, Karl, 3,803,691.

O'Brien, Jay Philip; and Rachlin, Albert Israel, to Hoffmann-La Roche Inc. Phenyl porpargyl thioethers. 3,804,905, Cl. 260-609.00e.

O'Brien, Lloyd J., to Coventry, Sarah, Inc. Method and article for storing, transporting, and displaying articles. 3,804,239, Cl. 206-503.000.

O'Brien, Peter D.: *See—*
Cassar, Louis Joseph; and O'Brien, Peter D., 3,804,061.

Ocean Trove Development Corporation: *See—*
Stevenson, William H., III, 3,804,959.

Ocnaschek, Frank Joseph; and Wade, Eugene Robert, to Electronic Communications, Inc. Frequency modulator-variable frequency generator. 3,805,192, Cl. 332-16.00r.

O'Connor, James E., to National Cash Register Company, The. Process for removing copper films from substrates. 3,804,689, Cl. 156-233.000.

O'Conor, Eugene F.: *See—*
Eppler, Richard Andrew; and O'Conor, Eugene F., 3,804,666.

Oda, Hiroshi: *See—*
Matsuoka, Michio; Kobayashi, Yoshikazu; Oda, Hiroshi; and Masuyama, Takeshi, 3,805,114.

Odawara, Kazuo; Magami, Mituharu; and Hirokawa, Kyoichi, to Nitto Kohki Co., Ltd. Reciprocating type portable filing machine. 3,803,773, Cl. 51-170.0tl.

Offermann, Bernd-Peter: *See—*
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Offshore Company, The: *See—*
Bryant, Frank Allan, 3,803,849.

Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Device for illumination in a copying machine. 3,804,513, Cl. 355-67.000.

Ogawa, Takao: *See—*
Fujimoto, Kyohei; Suyama, Nobuyuki; Hiroi, Yoshiyasu; Ito, Hideo; Haruki, Hiroshi; Ogawa, Takao; and Kobayashi, Tsutomu, 3,805,269.

Ogiso, Mitsutoshi; Takahashi, Kiyoshi; Furukawa, Hiroshi; and Itani, Takashi, to Canon Kabushiki Kaisha. System for simultaneous recording with a camera and system for synchronized reproduction. 3,804,497, Cl. 352-17.000.

Oglebay Norton Company: *See—*
Bognar, James A., 3,804,701.

Oglesbee, Richard K., to Anchor Hocking Corporation. Carrier for disk-shaped articles. 3,804,311, Cl. 224-49.000.

Oguma, Masaaki: *See—*
Sawada, Tsutomu; and Oguma, Masaaki, 3,804,444.

Ohkubo, Kinji: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,804,624.

Ohkuma, Akihiro, to Matsushita Electric Industrial Co., Ltd. Method for coating electronic components. 3,804,737, Cl. 204-181.000.

Ohmura, Yasuhiro: *See—*
Takamiya, Tadashi; Kurata, Masaya; Kimura, Tomiaki; Hisamoto, Kazuyoshi; and Ohmura, Yasuhiro, 3,804,813.

Ohno, Masaaki, to Tokico Ltd. Flow quantity measuring system. 3,803,912, Cl. 73-195.000.

Ohno, Yoshio; Eda, Korekiyo; Yamamura, Toshio; and Yamasaki, Kosaburo, to Kanegafuchi Boseki Kabushiki Kaisha. Method for preparing a multi-layer structure. 3,804,690, Cl. 156-242.000.

Ohsaka, Yoshisuke: *See—*
Katsumori, Teiji; Ohsaka, Yoshisuke; and Kato, Tetuo, 3,804,216.

Oka, Hiroyuki: *See—*
Ishikawa, Masakazu; and Oka, Hiroyuki, 3,804,468.

Okada, Shigetaka; and Higashibara, Masataka, to Hayashibara Company, Limited. Method of producing beta-amylase by bacterial fermentation. 3,804,718, Cl. 195-66.00r.

Okamoto, Osamu: *See—*
Kudo, Tetsuichi; Yoshida, Motoko; and Okamoto, Osamu, 3,804,674.

Okamoto, Ryohei. Process for purifying 2-mercaptobenzothiazole. 3,804,846, Cl. 260-306.000.

Okamoto, Tsuneo: *See—*
Kishi, Yasunori; Kobayashi, Junio; Yamaguchi, Masami; and Okamoto, Tsuneo, 3,805,185.

Okano, Keigo: *See—*
Kinjo, Hisao; and Okano, Keigo, 3,805,285.

Okuniewski, Vincent F.; and Flower, Leonard B. Filtering device. 3,804,258, Cl. 210-460.000.

Okuzawa, Yasutoshi: *See—*
Kanekominami, Keiji; Okuzawa, Yasutoshi; and Numata, Saburo, 3,804,351.

Oldman, Murray. Electrical bus system. 3,804,970, Cl. 174-16.00b.

Olds, Mac L. Flexible support device for cameras. 3,804,356, Cl. 248-179.000.

O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., to ACF Industries, Incorporated. Apparatus for securing lading on railway flat cars. 3,804,028, Cl. 105-369.00a.

Oliver, Earl D., to Montecatini Edison S.p.A. Extractive distillation of pyridine-water azetrope with a bisphenol. 3,804,722, Cl. 203-14.000.

Oliverios, Maynard F. Inflatable foot support device. 3,803,645, Cl. 5-327.000.

Olivetti, Ing., C., & C., S.p.A.: *See—*
Maquignaz, Mario; Benedetto, Bruno; and Lingeri, Antonio, 3,804,006.

Olschewski, Armin: *See—*
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Olympus Optical Co., Ltd.: *See—*
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Olympus Optical Company, Limited: *See—*
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Morokuma, Tadashi; and Kazawa, Tokujiro, 3,804,491.

Omark Industries, Inc.: *See—*
Pomeroy, Raymond Visher, 3,804,315.

Omori, Norio: *See—*
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Onkyo Kabushiki Kaisha: *See—*
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Ono, Hisatake: *See—*
Osada, Chiaki; Satomura, Masato; and Ono, Hisatake, 3,804,628.

Ooba, Shigehiro; Ozaki, Toshiaki; Yamamoto, Sigeo; and Tanaka, Katsutoshi, to Sumitomo Chemical Company, Ltd. N-phenylsuccinimides. 3,804,856, Cl. 260-326.440.

Orjans, Jerker; and Lamberg, Martti, to Kemira Oy. Apparatus for liquid-liquid extraction. 3,804,594, Cl. 23-270.500.

Orlando, Luciano, to Honeywell Information Systems Italia. Driving circuit for a switching transistor. 3,805,094, Cl. 307-300.000.

Orr, Thomas M., to Orrco. Diesel fuel primer pump. 3,803,988, Cl. 92-85.000.

Orrco: *See—*
Orr, Thomas M., 3,803,988.

Orso, Francis L.: *See—*
Meissner, Helmuth E.; Orso, Francis L.; Pierce, Timothy E.; and Stiles, Janice L., 3,804,650.

Osada, Chiaki; Satomura, Masato; and Ono, Hisatake, to Fuji Photo Film Company, Ltd. Photosensitive compositions comprising a photosensitive polymer and a photochromic compound. 3,804,628, Cl. 96-90.0pc.

Osamu, Samuta; Hirojoshi, Ohno; and Tauao, Nakazawa, to Victor Company of Japan, Ltd. Brushless DC motor using hall elements. 3,805,134, Cl. 318-254.000.

Osterman, Sven-Olof: *See—*

Hogstedt, Klas Ragnar Magnus; Knutsen, Tryggve Lund; Svensson, Erik Torsten Lennart; and Osterman, Sven-Olof, 3,804,964.

Osterreichische Stydiengesellschaft fur Atomenergie Ges m.b.H.: *See—*
Higatsberger, Michael J.; Rumpold, Karl; and Franz, Viehbock, 3,805,079.

Ostradyne, Inc.: *See—*
Ostrander, Robert F., 3,803,909.

Ostrander, Robert F., to Ostradyne, Inc. Vehicle and engine testing apparatus. 3,803,909, Cl. 73-117.000.

Ostroot, Gabriel W.: *See—*
Chatterji, Jiten; and Ostroot, Gabriel W., 3,804,174.

Ostrop, Berthold; Harhoff, Karl; Rassmann, Christoph; and Hermann, Martin, to Gewerkschaft Eisenhutte Westfalia. Longwall winning machine having pivoted cutter. 3,804,465, Cl. 299-34.000.

Otto, Bernhard: *See—*
Hermann, Eike; Otto, Bernhard; and Von Graeve, Erdmann Edler, 3,803,694.

Outeru, Sadamu; and Kobayashi, Hiroshi. Group-of-curves pattern identification apparatus. 3,804,519, Cl. 356-71.000.

Owa, Masaru: *See—*
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Owens-Illinois, Inc.: *See—*
Allgeyer, Guy Hugo, 3,803,981.
Vogt, Thomas E., 3,804,403.

Oxlade, Roy R., to British Iron and Steel Research Association, The. Rolling mill work roll assemblies. 3,803,683, Cl. 29-125.000.

Oyama, Hiroaki: *See—*
Nakamura, Hiroshi; Oyama, Hiroaki; Kato, Tadayoshi; and Miyo, Tokihiro, 3,805,173.

Ozaki, Toshiaki: *See—*
Ooba, Shigehiro; Ozaki, Toshiaki; Yamamoto, Sigeo; and Tanaka, Katsutoshi, 3,804,856.

Pall Corporation: *See—*
Rosenberg, David J., 3,803,810.

Palumbo, Julius T. Combination ladder and mudboard. 3,804,198, Cl. 182-21.000.

Panneman, Harm Jan, to Akazona Incorporated. Novel benzcyclobutene derivatives. 3,804,898, Cl. 260-564.00a.

Panock, Walter: *See—*
Neumann, Charles G.; Krueger, Harvey R.; and Panock, Walter, 3,803,869.

Panokraft Corporation of Canada Limited: *See—*
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Pantukh, Boris Izrailevich: *See—*
Liakumovich, Alexandr Grigorievich; Linkov, Alexei Dmitrievich; Rutman, Grigory Iosifovich; Michurov, Jury Ivanovich; Belgorodsky, Izrail Markovich; Sire, Efim Moiseevich; and Pantukh, Boris Izrailevich, 3,804,911.

Pape, Heinz: *See—*
Goerens, Paul; and Pape, Heinz, 3,805,072.

Papetti, Stelvio; and Ku, Ping L., to Foster Grant Co., Inc. Method of preventing build-up in a polymerization reactor. 3,804,924, Cl. 260-880.00r.

Paredes, Alfredo E. Squelch circuit with time constant controlled by signal level. 3,805,166, Cl. 325-478.000.

Parker-Hannifin Corporation: *See—*
Knaefel, James O.; and Robinson, Phillip E., 3,805,011.

Parkes, Ralph C. Baking oven. 3,804,583, Cl. 432-230.000.

Parks-Cramer Company: *See—*
Mulligan, William L., 3,803,822.

Pars, Harry G.: *See—*
Razdan, Raj K.; Pars, Harry G.; Weinhardt, Klaus Kurt; and Howes, John F., 3,804,841.

Parsons, Charles F., Jr. Dust filter. 3,803,814, Cl. 55-287.000.

Paschkl, Hans-Dieter: *See—*
Koschmieder, Hartmut; Olschewski, Armin; Paschkl, Hans-Dieter; Pflugner, Wolfgang; and Rabe, Jurgen, 3,804,203.

Pass, Roger D. Lather applicators. 3,804,537, Cl. 401-190.000.

Passal, Frank, to M&T Chemicals Inc. Electroplating processes and compositions. 3,804,726, Cl. 204-43.00t.

Passanti, Francesco A.: *See—*
Gibbons, Joseph B.; and Passanti, Francesco A., 3,804,249.

Passmore, Edmund M.; and Matheson, Wilfrid G., to GTE Sylvania Incorporated. Method of making an improved refractory boat for metal vaporization. 3,803,707, Cl. 29-611.000.

Pasternack, George, to Continental Can Company, Inc. Photopolymerizable polyester compositions. 3,804,736, Cl. 204-159.230.

Paton, Boris Evgenievich; Thedovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich. Apparatus for electroslag remelting. 3,804,150, Cl. 164-252.000.

Patrick, Paul D., Jr.; and Thomas, Brantley D., Jr., to Westvaco Corporation. Process for recovery of rosin and fatty acid from alkaline black liquor. 3,804,818, Cl. 260-97.500.

Patten, Raymond A.; and Bey, Paul P., to United States of America, Navy. Transparent film uniformity gauge. 3,804,532, Cl. 356-108.000.

Patton, John T., Jr.: *See—*
Demou, John G.; Pizzini, Louis C.; and Patton, John T., Jr., 3,804,782.

Pavlov, Leonid Viktorovich: *See—*
Paton, Boris Evgenievich; Thedovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,804,150.

Pazsint, Daniel A.: *See—*
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Peabody Engineering Corporation: *See—*
Arnold, Orlan M.; and Horn, Michael F., 3,804,386.

Peacock, Peter J.; and Scarnato, Thomas J., to International Harvester Company. Self-adjusting crop deflector. 3,803,821, Cl. 56-192.000.

Pearl, David R.; and Robison, Samuel Clifford, to Gerber Garment Technology, Inc. System and method for cutting pattern pieces from sheet material. 3,803,960, Cl. 83-56.000.

Pearsall, Samuel H.: *See—*
Benson, Robert W.; Pearsall, Samuel H.; and Reed, Robert G., 3,804,043.

Pearson, R. A., Company: *See—*
Graham, Robert H., 3,803,993.

Peck, Wayne P., to Electronic Communications, Inc. Method of making a heat pipe. 3,803,688, Cl. 29-157.30r.

Peddinghaus, Carl Ullrich: *See—*
Peddinghaus, Paul Carl; and Peddinghaus, Carl Ullrich, 3,803,893.

Peddinghaus, Paul Carl; and Peddinghaus, Carl Ullrich. Process for multiple bending of rods and a bending machine for carrying out this process. 3,803,893, Cl. 72-306.000.

Pedersen, Henning Kristen. Carrier packings. 3,803,990, Cl. 93-35.00h.

Peeples, Allyn W. Vehicle brake lining wear indication apparatus. 3,805,228, Cl. 340-52.00a.

Pekau, Dietlind, to Siemens Aktiengesellschaft. Method for the production of highly-resolved sonar pictures. 3,805,222, Cl. 340-3.00r.

Pelorex Corporation: *See—*
Rait, Joseph M.; Gilmour, Alexander Scott, Jr.; and Sellers, Edward C., 3,804,511.

Pelton & Crane Company: *See—*
Leffler, Dennis Frank, 3,804,460.

Pendleton, Frank P., to Vac-U-Max. Apparatus for classification of particulate materials. 3,804,245, Cl. 209-240.000.

Pennsylvania Engineering Corporation: *See—*
Maurice, Harvey W.; and Dortenzo, Alexander T., 3,804,393.

Pennwalt Corporation: *See—*
Buchholz, Bernard, 3,804,871.
Dimmig, Daniel Ashton, 3,804,842.

Penrose, Richard T.; and Thompson, John R., to General Electric Company. Nuclear fuel element. 3,804,709, Cl. 176-78.000.

Pepin, Theodore John, to United States of America, Navy. Temperature sonde. 3,805,256, Cl. 340-208.000.

Peppard, Donald F.: *See—*
Mason, George W.; Lewey, Sonia; and Peppard, Donald F., 3,804,940.

Perdue, Phillip T.: *See—*
Auxier, John A.; Perdue, Phillip T.; Shinpaugh, William H.; and Thorngate, John H., 3,805,070.

Perry, Eric, to Nobilium Products, Inc. Apparatus for preparing duplicating materials. 3,804,344, Cl. 241-65.000.

Perry, William O.; Sorenson, Marius W.; and Hairston, Thomas J., to Dow Chemical Company, The. High molecular weight resins having low solution viscosities. 3,804,795, Cl. 260-30.4ep.

Peters, Charles L., Jr., to Box Innards, Inc. Gear transmission. 3,803,946, Cl. 74-745.000.

Peters, Leo. Method for roasting meat. 3,804,965, Cl. 426-523.000.

Petersen, Christian C., to Polaroid Corporation. Tractive electromagnetic device. 3,805,204, Cl. 335-255.000.

Peterson, Earl A.: *See—*
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,804,268.

Peterson, George N., to Dresser Industries, Inc., mesne. Method and apparatus for reinforcing cup-type grinding wheels. 3,804,687, Cl. 156-161.000.

Peterson, Robert H.; and Christiansen, Richard L. Method of extending life to copper anode molds. 3,803,701, Cl. 29-401.000.

Petro, Victor P.: *See—*
Betts, James F.; Fotland, Richard A.; and Petro, Victor P., 3,804,774.

Petrocci, Alfonso N.: *See—*
Lada, Arnold; Petrocci, Alfonso N.; and Merianos, John J., 3,803,885.

Pettinger, Donald Stanley; and Roberts, Geoffrey Alfred, to Nuclear Power Group Limited, The. Nuclear reactor. 3,804,711, Cl. 176-84.000.

Pews, R. Garth, to Dow Chemical Company, The. Fire retardant plasticizers. 3,804,792, Cl. 260-31.600.

Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., to Dow Chemical Company, The. Process for preparing pyridylcarbamates. 3,804,844, Cl. 260-295.0am.
Pfaff Industriemaschinen GmbH, Firma: *See—*
Martin, August; and Albrecht, Ernst, 3,804,038.
Pfister, Rudolf: *See—*
Sallman, Alfred; and Pfister, Rudolf, 3,804,877.
Pfizer Inc.: *See—*
Rao, Koppaka V., 3,804,947.
Pflugner, Wolfgang: *See—*
Koschmieder, Hartmut; Olschewski, Armin; Paschkl, Hans-Dieter; Pflugner, Wolfgang; and Rabe, Jurgen, 3,804,203.
Pham-Ngu, Tung, to Thomson-CSF. Field effect transistor having two gates for functioning at extremely high frequencies. 3,805,129, Cl. 317-235.00r.
Pharmacia AB: *See—*
Ingelman, Bjorn Gustav-Adolf, 3,804,892.
Philbrick, John W.; Pillus, Charles A.; Poponiak, Michael R.; and Schneider, Christian P., to International Business Machines Corporation. Method for non-contact semiconductor resistivity measurement. 3,805,160, Cl. 324-158.00d.
Philco-Ford Corporation: *See—*
Scherzinger, Earl S., 3,804,211.
Phillips, Claude F. Method of manufacturing fuel pumps. 3,803,686, Cl. 29-156.400.
Phillips Pertoleum Company: *See—*
Hendrix, Hurshel V., 3,803,850.
Phillips Petroleum Company: *See—*
Drehman, Lewis E.; and Farha, Floyd, Jr., 3,804,745.
Fahey, Darryl R., 3,804,914.
Furrow, Clarence L., 3,804,910.
Henderson, Miles L., 3,804,918.
Hughes, William B.; and Zulch, Ernest A., 3,804,870.
Mills, King L., 3,803,807.
Picker Corporation: *See—*
Hunt, Robert P.; and Hura, Michael, 3,804,400.
Yager, Norman J.; Poole, Warren A.; and Arndi, Timothy, 3,805,080.
Piechocki, Benjamin, to Western Electric Company, Incorporated. Compensator base for lead-frame bonding. 3,804,319, Cl. 228-6.000.
Piegza, Henry J., to WSF Industries Inc. Pressure vessel. 3,804,288, Cl. 220-46.00r.
Pierce, Timothy E.: *See—*
Meissner, Helmuth E.; Orso, Francis L.; Pierce, Timothy E.; and Stiles, Janice L., 3,804,650.
Pierle, Willy R. J.: *See—*
Keijzer, Johan H.; and Pierle, Willy R. J., 3,804,217.
Pierres Holding S.A.: *See—*
Herziger, Gerd Bernd; and Steffen, Jurg, 3,805,015.
Pikon, Jerzy; Wasilewski, Piotr; and Mitka, Boleslaw. Convection drier with a travelling bed. 3,803,726, Cl. 34-203.000.
Pilkington Brothers Limited: *See—*
Gaskell, Philip Hedley; Tilley, Brian Paterson; Irlam, Philip Sidney; Miller, Robert Percy; and Barry, Thomas Ian, 3,804,608.
Piller, Bernhard: *See—*
Loeffel, Hansrolf; Piller, Bernhard; and Froehlich, Alfred, 3,804,630.
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Rejsa, Jack J., 3,804,637.
Sweet, Samuel G., 3,805,009.
Pillus, Charles A.: *See—*
Philbrick, John W.; Pillus, Charles A.; Poponiak, Michael R.; and Schneider, Christian P., 3,805,160.
Pineville Kraft Corporation: *See—*
Whelan, James A.; Henry, James R.; and White, Horace H., 3,804,261.
Piper Aircraft Corporation: *See—*
Scott, Robert C.; and Flinchum, John A., 3,804,353.
Pipkins, David D. Meat treating method. 3,804,962, Cl. 426-418.000.
Pippin, Reginald F., Jr. Propelled toy arrangement. 3,803,751, Cl. 46-74.00b.
Pitner, Alfred, 1/2 to Nadella. Assembly of a connecting element and a torque transmitting element. 3,804,541, Cl. 287-53.00r.
Pitts, Francis Watson. Automobile tray. 3,804,031, Cl. 108-44.000.
Pizzini, Louis C.: *See—*
Demou, John G.; Pizzini, Louis C.; and Patton, John T., Jr., 3,804,782.
Plastics, Inc.: *See—*
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Plate, Nikolai Aefredovich: *See—*
Samoilov, Sergei Mikhailovich; Plate, Nikolai Aefredovich; Maltsev, Vadim Vasilievich; Monastyrsky, Viktor Nikolaevich; and Kargin, Valentin Alexeevich, 3,804,816.
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Pleer, Thomas P.: *See—*
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Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Apparatus for automatically cutting a continuously advancing tube into selected lengths. 3,803,966, Cl. 83-294.000.
Plessey Handel und envestments A.G.: *See—*
Skutt, Thomas; and Finn, Frank John, 3,803,649.
Plevyak, Joseph B. Self driven turret lathe rotating tool attachment. 3,803,978, Cl. 90-11.00r.
Plonsker, Larry, to Ethyl Corporation. Process for removal of catalyst from amorphous copolymers. 3,804,815, Cl. 260-80.780.
Pobuda, Eckhard T.: *See—*
Krebs, Robert E.; and Pobuda, Eckhard T., 3,804,004.
Podler, Glenn D.: *See—*
Brooks, Everett G.; Heise, Nyles N.; Lewis, David O.; Podler, Glenn D.; and Zimmerman, Dean O., 3,805,245.
Podlesnykh, Petr Ivanovich: *See—*
Gelfand, Mikhail Lvovich; Isipenjuk, Yakov Isaakovich; Podlesnykh, Petr Ivanovich; Sergeichik, Vladimir Adamovich; Rutgaizer, Mikhail Isaakovich; and Antipov, Georgy Afanasievich, 3,804,180.
Pokora, Robert J.: *See—*
Gasparac, Rudolph J.; Pokora, Robert J.; and Sawant, Ulhas S., 3,804,342.
Polaroid Corporation: *See—*
Erlichman, Irving, 3,805,282.
Petersen, Christian C., 3,805,204.
Sorli, Duncan C., 3,804,625.
Pomeroy, Raymond Visher, to Omark Industries, Inc. Powder actuated tool. 3,804,315, Cl. 227-10.000.
Pompa, Thomas N., Jr.; and Resch, Robert J., to United Aircraft Corporation. Bimodal inverter. 3,805,141, Cl. 321-11.000.
Poole, Warren A.: *See—*
Yager, Norman J.; Poole, Warren A.; and Arndi, Timothy, 3,805,080.
Popodi, Alfred E.: *See—*
Ensor, John W.; and Popodi, Alfred E., 3,805,110.
Poponiak, Michael R.: *See—*
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Popov, Lev Vasilievich: *See—*
Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Botko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Popov, Lev Vasilievich; Anisiferov, Stanislav Stepanovich; and Kulikov, Anatoly Petrovich, 3,804,149.
Porcelli, Richard Victor: *See—*
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Post Office, The: *See—*
Rollett, John Mortimer, 3,805,178.
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Berlin, German Semenovich; Potapov, Nikolai Akimovich; and Shenker, Dmitry Dmitrievich, 3,805,190.
Potter, Edward: *See—*
Potter, Edward; Potter, Irving W.; and Smyth, Robert M., 3,804,935.
Potter, Edward; Potter, Irving W.; and Smyth, Robert M., 1/2 to Dant & Russell, Inc. and 1/2 to Potter, Edward. Process for making a particle board. 3,804,935, Cl. 264-122.000.
Potter Instrument Company: *See—*
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Potter Instrument Company, Inc.: *See—*
Potter, John T., 3,804,325.
Potter, Irving W.: *See—*
Potter, Edward; Potter, Irving W.; and Smyth, Robert M., 3,804,935.
Potter, John T., to Potter Instrument Company, Inc. 96 Column card turnaround document. 3,804,325, Cl. 234-41.000.
Pouska, George A.: *See—*
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Power Conversion, Inc.: *See—*
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Powondra, Richard Joseph: *See—*
Hammond, Ronald Wayne; Morris, Robert; Powondra, Richard Joseph; and Ross, Alexander Robert, 3,804,991.
PPG Industries, Inc.: *See—*
Lindberg, Leo H., 3,804,610.
Pradel, Karl: *See—*
Geese, Karl Heinz; Oberschiven, Hermann; and Pradel, Karl, 3,803,691.
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Precision Hardware Inc.: *See—*
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Precision Industries, Inc., mesne: *See—*
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Pribish, Bernard A.: *See—*
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Princeton Electro Dynamics, Inc.: *See—*
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Prival, Katharine Blossom: *See—*

Honnold, George Herbert; and Prival, Katharine Blossom, 3,804,993.

Procter & Gamble Company, The: *See—*
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Wahlert, Stanley D., 3,804,240.

Proctor, Rodney D.: *See—*
Robinett, Ronald R.; Proctor, Rodney D.; Ranstrom, Allan M.; and Rogers, Norman K., 3,804,357.

Prost-Marechal, Jacques; and Tomasik, Georges, to Roussel-UCLAF. 3,3-Ethylenidioxy-4,5-seco-gonene-5-ones. 3,804,859, Cl. 260-340.900.

Psenka, Joseph A.; and Tersch, Richard W., to Lear Siegler, Inc. Method and apparatus for finishing gears. 3,803,977, Cl. 90-1.600.

Pullman Incorporated: *See—*
McNally, George S., 3,804,026.

Pulsepower Systems, Inc.: *See—*
Elmore, Lester C.; and Broxholm, Thomas M., 3,803,975.

Pultz, Wallace W., to Cincinnati Milacron Inc. Extruder construction. 3,804,382, Cl. 259-192.000.

Purman, Joseph W., to Litton Industrial Products, Inc. Refrigerant cooled electric motor and method for cooling a motor. 3,805,101, Cl. 310-54.000.

Purrmann, Robert: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dieter, 3,804,794.

Purves, Edward Robert, to Procter & Gamble Company, The. Method for producing mayonnaise. 3,804,957, Cl. 426-363.000.

Pustka, Karel: *See—*
Fliesser, Engelbert; Pustka, Karel; and Wagensonner, Eduard, 3,805,279.

Q-Bit Corporation: *See—*
Callaway, Garry R., 3,805,164.

Quaintance, Harold J.: *See—*
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Quigley, Joseph C.: *See—*
Acks, Robert S.; and Quigley, Joseph C., 3,805,157.

Quitt, Peter; Volger, Karl; deceased (by Volger, Heinrich; Volger, Franzieka Elisabeth; and Volger, Niklaus Edward; sole heirs at law); and De Weck, Alain. N-(substituted-alpha-penicilloyl)-amino carboxylic. 3,804,820, Cl. 260-112.500.

Rabe, Jurgen: *See—*
Koschmieder, Hartmut; Olschewski, Armin; Paschkl, Hans-Dieter; Pflugner, Wolfgang; and Rabe, Jurgen, 3,804,203.

Rachlin, Albert Israel: *See—*
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Rader, Robert R., to Wirtz Manufacturing Company, Inc. Battery grid casting and trimming machine. 3,803,676, Cl. 29-2.000.

Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., to Continental Can Company, Inc. Photopolymerizable compositions prepared from beta-hydroxy esters and polyitaconails. 3,804,735, Cl. 204-159.230.

Raduly, Lajus; Urmosi, Ioan; Toderbaun, Nita; and Chiroui, Nicolae, to Grupul Industrial de Chimie. Process for gas demercuration. 3,803,803, Cl. 55-72.000.

Radutsky, Grigory Avramovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,803,797.
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Ragen Precision Industries, Inc.: *See—*
Lopata, Ira, L.; Hoerner, Jacob W.; and Sloane, Theodore A., 3,804,498.

Rait, Joseph M.; Gilmour, Alexander Scott, Jr.; and Sellers, Edward C., to Pelorex Corporation. Method and apparatus utilizing magnetic storage for transferring graphical information. 3,804,511, Cl. 355-17.000.

Rakow, Marvin S.: *See—*
Robinson, Franklin H.; Rakow, Marvin S.; and Jamieson, Ernest, 3,804,605.

Ramanadin, Salindres, to Societe Rhone-Progil. Fluorination catalyst and process. 3,804,778, Cl. 252-441.000.

Ramanathan, Visvanathan. Water-insoluble styryl dyestuffs containing a puridyl-lower alkyl group. 3,804,831, Cl. 260-240.00r.

Rambauske, Warner R., to Raytheon Company. Catoptric lens arrangement. 3,805,051, Cl. 240-41.35a.

Rambauske, Werner R., to Raytheon Company. Beam forming mirror apparatus. 3,805,052, Cl. 240-41.35c.

Ramsay, Ray D.: *See—*
Voss, Raymond G.; and Ramsay, Ray D., 3,804,936.

Ramsey, Ralph. Convertible snow plow with slidable closing wings. 3,803,733, Cl. 37-44.000.

Randall, John Courtright; and Keith, Charles Herbert, to Celanese Corporation. Apparatus for making tobacco smoke filters. 3,804,695, Cl. 156-441.000.

Rando, Robert, to Bell Telephone Laboratories, Incorporated. Current limit circuit with superseding characteristic to activate overcurrent protection circuit. 3,805,142, Cl. 321-11.000.

Ranstrom, Allan M.: *See—*
Robinett, Ronald R.; Proctor, Rodney D.; Ranstrom, Allan M.; and Rogers, Norman K., 3,804,357.

Rao, Koppaka V., to Pfizer Inc. Isopropylidene azastroptonigrin and streptonizrain-monoxide. 3,804,947, Cl. 424-119.000.

Rapata, George Martin, to Illinois Tool Works, Inc. Plastic drive fastener. 3,803,973, Cl. 85-80.000.

Rapp, Harold, to Miles Laboratories, Inc. Egg extender composition and process therefor. 3,804,951, Cl. 426-167.000.

Rassmann, Christoph: *See—*
Ostrop, Berthold; Harhoff, Karl; Rassmann, Christoph; and Hermann, Martin, 3,804,465.

Rau, James E.; Van Wyk, Rogell; and Watson, George A., to Rockwell International Corporation. Digital acceleratiion measurement device. 3,805,089, Cl. 307-233.000.

Rau, Kurt: *See—*
Gelhaar, Rolf; Nitz, Juergen; and Rau, Kurt, 3,803,809.

Raubenheimer, Johann Nicolaas. Cleaning devices. 3,803,658, Cl. 15-1.700.

Rauhut, Michael McKay; and Bollyky, Laszlo Joseph, to American Cyanamid Company. Bis-(phthalic acid)-oxalic acid anhydrides and related compounds. 3,804,891, Cl. 260-515.00p.

Ravve, Abraham: *See—*
Radlove, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,804,735.

Ray, Neil Hunter: *See—*
Lewis, Cyril John; Ray, Neil Hunter; and Robinson, William Derek, 3,804,645.

Rayow, Robert S.; and Gillette, Charles L. Rear vision reflection device for a helmet. 3,804,495, Cl. 350-298.000.

Raytheon Company: *See—*
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Rambauske, Werner R., 3,805,052.
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Razdan, Raj K.; Pars, Harry G.; Weinhardt, Klaus Kurt; and Howes, John F., to Little, Arthur D., Inc. Amino-acid ester derivatives of 2H-chromene-5-ol. 3,804,841, Cl. 260-293.580.

Razumeev, Jury Alexeevich: *See—*
Lyass, Abram Moiseevich; Borsuk, Pavel Afanasievich; Usubov, Zokhrab Gamid Ogly; Kuznetsov, Viktor Georgievich; Kagan, Naum Yakovlevich; Razumeev, Jury Alexeevich; Bortnik, Vladimir Mironovich; and Korenbljum, Isai Volfovich, 3,804,641.

RCA Corporation: *See—*
Avins, Jack, 3,804,981.
Clover, Richmond Bennett, Jr., 3,804,766.
Hausman, Earl Thomas, 3,805,117.
Miller, Arthur, 3,805,195.
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RCDS Enterprises, Inc., mesne: *See—*
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Lester, Robert W., 3,805,265.

Reams, William H., to United States of America, Navy. Clutch with centrifugal engaging and releasing weights. 3,804,222, Cl. 192-103.00b.

Reckitt & Colman Products Limited: *See—*
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Recknagel, Fred M., to Chevron Research Company. Apparatus for cooling and sizing hot thermoplastic extrudates. 3,804,567, Cl. 425-71.000.

Redifor Limited: *See—*
McLanaghan, Roy, 3,805,253.

Redlich, Horst: *See—*
Klemp-Hans—Joachim; and Redlich, Horst, 3,805,100.

Redman, Harry M. Pencil box. 3,804,293, Cl. 221-102.000.

Reed, Dale F.; and Cebula, Jerome J., to State of Colorado, Department of Natural Resources Division of Wildlife, The. One-way deer gate. 3,803,763, Cl. 49-49.000.

Reed, Robert G.: *See—*
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Rees, Herbert, to Husky Manufacturing & Tool Works Limited. Injection molding machine with article remover. 3,804,568, Cl. 425-139.000.

Reese, Dennis L.; and Jenkins, William, to Western Liquid Level, Inc. Differential pressure sensor. 3,803,917, Cl. 73-393.000.

Reese, Robert O., to Time Computer, Inc., mesne. Wristwatch calculator. 3,803,834, Cl. 58-152.00r.

Regec, John J.: *See—*
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Regie Nationale des Usines Renault: *See—*
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Reilly, Richard Joseph: *See—*
Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, 3,804,280.

Reineke, Charles E.; and Gibbons, Carl L., to Dow Chemical Company, The. Esters of trihalopivalic acids. 3,804,885, Cl. 260-487.000.

Rejsa, Jack J., to Pillsbury Company, The. Dough lapping apparatus. 3,804,637, Cl. 99-450.100.

Remick, Cassius D., to Electrohome Limited. Incorporated hinge with stop and removable lock pin. 3,803,668, Cl. 16-128.00r.

Renfroe, Walter D., to Terra Marine Scoop Company, Inc. Floating drag scoop. 3,804,177, Cl. 172-26.500.

Rennels, William Marion. Motorcycle handle signal control retatable or depressible to actuate signal controlling switches. 3,805,003, Cl. 200-157.000.

Renner Company, The: *See—*
James, William T., III, 3,804,278.

Resch, Robert J.: *See—*
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Research Energy of Ohio, Inc.: *See—*
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Research Engineering and Manufacturing, Inc.: *See—*
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Respiratory Care, Inc.: *See—*
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Reswick, James B., to Attending Staff Association of Rancho Los Amigos Hospital. Flotation bed. 3,803,647, Cl. 5-348.0wb.

Reuss, Helmut: *See—*
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Rexnord Inc.: *See—*
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Reynard, Remi: *See—*
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Reynolds, Alvin E.: *See—*
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Reynolds Metals Company: *See—*
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Reynolds Printasign Company: *See—*
Thiene, Carl G.; and Smith, Henry, 3,804,014.

Reynolds Products, Inc.: *See—*
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Reynolds, R. J., Tobacco Company: *See—*
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Rheem International, Inc., mesne: *See—*
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Rheem Manufacturing Company: *See—*
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Rhone-Poulenc S.A.: *See—*
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Chabardes, Pierre; and Colevray, Louis, 3,804,869.
Julia, Marc, 3,804,882.

Ricciardi, Ronald J. Gravimetric feeder. 3,804,298, Cl. 222-56.000.

Rich, Barry S.: *See—*
Morris, Floyd D.; and Rich, Barry S., 3,805,248.
Morris, Floyd D.; and Rich, Barry, S., 3,805,251.
Morris, Floyd D.; and Rich, Barry S., 3,805,252.

Rich, Barry S., to Ultronic System Corporation. Format hard copy display apparatus for a data processing printout system. 3,805,249, Cl. 340-172.500.

Rich, Barry S., to Ultronic Systems Corporation. Partial message erase apparatus for a data processing printout system. 3,805,250, Cl. 340-172.500.

Richard, Gordon L.; and Blosser, Robert W. Method for reducing embrittlement condition of metals. 3,804,734, Cl. 204-157.10h.

Richard, Leo P.: *See—*
Lechaton, John S.; Richard, Leo P.; and Smith, Daryl L., 3,804,738.

Richard, Pierre, to Jap S.A. Watch dial with integrally formed raised symbols. 3,803,833, Cl. 58-127.00r.

Richards, David: *See—*
Bennett, Robert Neil; and Richards, David, 3,804,742.

Richards, Robert W.: *See—*
Konkal, John; Egbert, James; and Richards, Robert W., 3,803,928.

Richardsen, Richard Flohrs: *See—*
Bielfeldt, Bernd Friedrich; and Richardsen, Richard Flohrs, 3,804,381.

Richelmann, Bernd H., to Delta Design, Inc. Contactor unit for integrated circuit testing. 3,805,159, Cl. 324-158.00f.

Richter, Johan C. F. C., to Kamyr Aktiebolag. Device for discharging cellulosic pulp out of a container. 3,804,304, Cl. 222-271.000.

Richter, Sidney B.; and Barnas, Eugene, to Velsicol Chemical Corporation. O-acylated benzohydroxonates. 3,804,874, Cl. 260-455.00b.

Ricoh Co., Ltd.: *See—*
Abe, Takeshi, 3,804,975.
Yamashita, Hajime, 3,804,241.

Ridenour, Ralph G.; and Stevens, Walter Chandler, Jr., to Universal Refrigeration, Inc. Compression staking apparatus. 3,803,897, Cl. 72-412.000.

Rieder, Alois: *See—*
Wagensonner, Eduard; Schmidt, Ulrich K.; and Rieder, Alois, 3,804,505.

Rieger, Peter, to ITT Industries, Inc. Arrangement for adhesively joining heat-dissipating circuit components by heat sinks and method of making them. 3,805,123, Cl. 317-234.00r.

Rieke Corporation: *See—*
Rieke, Glenn T., 3,804,305.

Rieke, Glenn T., to Rieke Corporation. Container closure with locking pull spout, and integral spout cap, pull ring, and outer seal. 3,804,305, Cl. 222-538.000.

Riggleman, Billy M.; and Young, William L., III, to United States of America, Interior. Filament wound reverse osmosis tubes. 3,804,259, Cl. 210-490.000.

Riggs & Lombard, Inc.: *See—*
Holm, William J., 3,803,879.

Riggs, Royal W. Fishing lure. 3,803,746, Cl. 43-35.000.

Ringel, Samuel: *See—*
Von Strandtmann, Max; Ringel, Samuel; and Gutt, Ann, 3,804,948.

Rishel, Richard O. Process and apparatus for the separation of liquid mixtures. 3,804,252, Cl. 210-84.000.

Risley, Curtis A., to GTE Sylvania Incorporated. Amplifier circuit having variable automatic gain control. 3,805,177, Cl. 330-29.000.

Ritner, Charles J. Telescopic cantilever gate assembly. 3,803,765, Cl. 49-427.000.

Rizzo, Leo, L. Flexible hose assembly means. 3,803,699, Cl. 29-237.000.

Ro-Search, Incorporated: *See—*
Liebscher, Anton I., 3,803,657.

Robbins, Donald D. Cyclonic combustion burner. 3,804,578, Cl. 431-158.000.

Roberts, Arthur, to United States of America, Atomic Energy Commission. Image-dissecting Cherenkov detector for identifying particles and measuring their momentum. 3,805,075, Cl. 250-366.000.

Roberts, Dennis A., to Time Computer, Inc., mesne. Solid state electronic wristwatch. 3,803,827, Cl. 58-4.00a.

Roberts, Donald J.; and Feasby, David L., to General Dynamics Corporation. Radome anti-icing system. 3,805,017, Cl. 219-213.000.

Roberts, Geoffrey Alfred: *See—*
Pettinger, Donald Stanley; and Roberts, Geoffrey Alfred, 3,804,711.

Robertshaw Controls Company: *See—*
Kelly, Samuel T., 3,805,099.

Robinett, Ronald R.; Proctor, Rodney D.; Ranstrom, Allan M.; and Rogers, Norman K. Car stereo expansion locking kit. 3,804,357, Cl. 248-203.000.

Robins, Roland K.; and Long, Robert A., to ICN Pharmaceuticals, Inc. 1-D-arabinofuranosylcytosine-3',5'-cyclic phosphate and derivatives thereof. 3,804,827, Cl. 260-211.50r.

Robinson, Franklin H.; Rakow, Marvin S.; and Jamieson, Ernest, to Cities Service Oil Company. Hydrocarbon fuel compositions containing hydrocarbyl acid phosphate salts of amino polyamides. 3,804,605, Cl. 44-66.000.

Robinson, Fredric A. Convertible shopping cart. 3,804,431, Cl. 280-36.00c.

Robinson, Phillip E.: *See—*
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Robinson, William Derek: *See—*
Lewis, Cyril John; Ray, Neil Hunter; and Robinson, William Derek, 3,804,645.

Robison, Samuel Clifford: *See—*
Pearl, David R.; and Robison, Samuel Clifford, 3,803,960.

Robson, Harry E., to Velsicol Chemical Corporation. Hydrocarbon conversion and hydrocracking with layered complex metal silicate and chrystile composition. 3,804,741, Cl. 208-110.000.

Robson, Robert: *See—*
Jervis, Graham James; and Robson, Robert, 3,804,762.

Rock, Wilfried: *See—*
Hubert, Helmut; Jung, Anton Ladislaus; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Burbach, Gerhard Schmidt, 3,804,548.

Rockwell International Corporation: *See—*
Rau, James E.; Van Wyk, Rogell; and Watson, George A., 3,805,089.

Rodia, Ralph M.: *See—*
Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., 3,804,844.

Rodov, Grigory Matveevich. Method for starting actuating member of machine and device for performing it. 3,803,835, Cl. 60-713.000.

Rodriguez, Juan A.: *See—*
Fiorino, Benjamin C.; and Rodriguez, Juan A., 3,804,992.

Rodriguez, Rodolfo R., to Baxter Laboratories, Inc. Dual wavelength photometer response circuit. 3,804,535, Cl. 356-217.000.

Roesch, Egon: *See—*
Wiedemann, Fritz; Thiel, Max; Stach, Kurt; Roesch, Egon; and Hardebeck, Klaus, 3,804,835.

Roessler, Manfred: *See—*
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Rogers, Benjamin T.: *See—*
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Rogers, John R.: *See—*
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Rogers, Norman K.: *See—*
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Rohm & Haas Company: *See—*
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De Benneville, Peter L.; Godfrey, William J.; and Sims, Homer J., 3,804,821.
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Rokler Manufacturing Company: *See—*
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Rokosky, Michael J.: *See—*
Rokosky, Walter P.; and Rokosky, Michael J., 3,803,949.
Rokosky, Walter P.; and Rokosky, Michael J., to Rokler Manufacturing Company. Indexing mechanism. 3,803,949, Cl. 74-815.000.
Roland, George W.: *See—*
Feichtner, John D.; Gottlieb, Milton; and Roland, George W., 3,805,196.
Rollett, John Mortimer, to Post Office, The. RC active filter circuit. 3,805,178, Cl. 330-107.000.
Rolscreiw Company: *See—*
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Romanov, Alexeevich Rudolf: *See—*
Ivanov, Alexandr Pavlovich; and Romanov, Alexeevich Rudolf, 3,803,980.
Rombi, Pietro; and D'Alfonso, Nunzio, to Alfa Romeo S.p.A. Oil rate regulator for internal combustion engine tightness member. 3,804,201, Cl. 184-6.100.
Romero, Carlos V. Anti-smog device-filtration mechanism. 3,803,812, Cl. 55-228.000.
Ronsse, August J.: *See—*
Baughn, James W.; Monroe, George A.; and Ronsse, August J., 3,804,527.
Root, Floyd A.; and White, Robert C., to Bendix Corporation, The. Method of forming titanium metal-glass hermetic seals. 3,803,875, Cl. 65-43.000.
Rorer, William H., Inc.: *See—*
Diamond, Julius, 3,804,950.
Rosa, Anthony G. Apparatus and method of shaping ball point pen refills. 3,804,538, Cl. 401-209.000.
Rosansky, Martin G., to Power Conversion, Inc. Non-aqueous battery construction and method of sealing same by cold welding. 3,804,671, Cl. 136-6.0ln.
Rose, Anthony T. Universal handle for surgical implements. 3,803,667, Cl. 16-114.00r.
Rose, Roland. Hand loom. 3,804,127, Cl. 139-34.000.
Rose, Selwyn H.; Woo, James T. K.; and Thornton, J. Scott, to Horizons Incorporated; a division of Horizons Research Incorporated. Shaped articles from reconstituted polyester. 3,804,811, Cl. 260-75.00t.
Rosenberg, David J., to Pall Corporation. Liquid-gas separator and filter. 3,803,810, Cl. 55-159.000.
Ross, Alexander Robert: *See—*
Hammond, Ronald Wayne; Morris, Robert; Powondra, Richard Joseph; and Ross, Alexander Robert, 3,804,991.
Ross, Alfred, to Habegger, Willi. Deflector for cable transport. 3,804,373, Cl. 254-190.000.
Ross, Charles, W., to Leeds & Northrup Company. Method for minimizing ehe effects of process distrubances on state estimators. 3,805,032, Cl. 235-150.100.
Ross, Roger J., to Singer Company, The. Sewing machine with improved basting stitch mechanism. 3,804,042, Cl. 112-181.000.
Ross, Rolf, to Schenck, Carl, Maschinenfabrik, G.m.b.H., Firma. Apparatus for controlling dynamic testing equipment. 3,803,906, Cl. 73-90.000.
Rossitto, Vincent E.: *See—*
Kruger, Jean J.; and Rossitto, Vincent E., 3,804,046.
Roth, Steffen. Self-cleaning pipe tamper. 3,804,101, Cl. 131-243.000.
Rothrjell, Rolf Eric. Method for identifying individuals using selected characteristic body curves. 3,805,238, Cl. 340-146.30e.
Rothweiler, Alfred: *See—*
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Roussel-UCLAF: *See—*
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Routson, Willis G.: *See—*
Katzer, Melvin F.; and Routson, Willis G., 3,804,556.
Rovatti, Igino. Skis equipped with a fairing adapted to improve their performance. 3,804,429, Cl. 280-11.13t.
Rowley, Horace P.: *See—*
Gooding, Chester M.; and Rowley, Horace P., 3,804,867.
Roy, James William, to International Telephone and Telegraph Corporation. Vacuum interrupter and methods of making contacts therefor. 3,805,000, Cl. 200-144.00b.
Royal Industries, Inc.: *See—*
McKenney, John D., 3,804,526.
Royce, Damon Vernerd, Jr.; and Drown, Harold Lewis, to Reynolds Metals Company. Process for the crystallization of aluminum nitrate nonahydrate. 3,804,598, Cl. 23-305.000.
Rubbermaid Industrial Products Corporation: *See—*
Brown, Thomas E.; Brotherton, Richard M.; and Shive, Howard J., 3,804,277.
Rubery, Owen & Co., Limited: *See—*
Smith, Richard Terence, 3,804,189.
Rubright, Phillip L., to Arco Industries Corporation. Composite flow control device. 3,804,366, Cl. 251-305.000.
Rucker Company, The: *See—*
Duncan, Anthony Bruce; Sprague, Richard Galen; and Chin, Arthur Hor Ting, 3,804,183.
Rudd, David William: *See—*
Bhattacharyya, Ranendra K.; Fiore, Angelo Ralph, Jr.; and Rudd, David William, 3,805,044.
Rudie, Peter S. Method of irrigating and treating an abcess. 3,804,097, Cl. 128-350.000.
Ruell, Hartwig: *See—*
Kiemle, Horst; and Ruell, Hartwig, 3,805,275.
Rufenacht, Bruno: *See—*
Kupper, Walter; and Rufenacht, Bruno, 3,804,530.
Ruhl, Charles A. H.; Meyer, Edward; and Chatterjea, Probir K., to International Harvester Company. Hydrostatic transmission control with hydraulic follow-up. 3,804,122, Cl. 137-625.660.
Ruhrchemie Aktiengesellschaft: *See—*
Noeske, Heinz; Feichtinger, Hans; and Falbe, Jurgen, 3,804,901.
Ruhrmann, Josef, Dr.-Ing.: *See—*
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Rumbold, Bernhard Carl; and Cartwright, John Edward, to Foseco International Limited. Exothermic antipiping compositions. 3,804,642, Cl. 106-38.270.
Rummel, Ralph R. Attachments for lanterns. 3,804,075, Cl. 126-258.000.
Rumpold, Karl: *See—*
Higatsberger, Michael J.; Rumpold, Karl; and Franz, Viehbock, 3,805,079.
Rung, Darrell G. Belt slitting apparatus. 3,803,959, Cl. 83-18.000.
Rupp, William C., to Chandler & Price Company, The. Auxiliary folder. 3,804,399, Cl. 270-62.000.
Ruschenburg, Ernst, to Deutsche Texaco Aktiengesellschaft. Process for treating waste water from industrial processes. 3,804,757, Cl. 210-59.000.
Ruscher, Markus; and Kruckels, Walter, to Maschinenfabrik Zell J. Kruckels KG. Regulated windup apparatus. 3,804,348, Cl. 242-67.10r.
Rushworth, William Ian: *See—*
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Rusk, Earl E., to Dow Chemical Company, The. Timing apparatus. 3,803,902, Cl. 73-56.000.
Russell, James P.: *See—*
Hoffman, Joseph K.; and Russell, James P., 3,804,886.
Russell, John X.: *See—*
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Rutgaizer, Mikhail Isaakovich: *See—*
Gelfand, Mikhail Lvovich; Isipenjuk, Yakov Isaakovich; Podlesnykh, Petr Ivanovich; Sergeichik, Vladimir Adamovich; Rutgaizer, Mikhail Isaakovich; and Antipov, Georgy Afanasievich, 3,804,180.
Rutledge, Thomas F., to ICI America Inc. Novel process for oxidation of substituted phenols using combinations of two metal salts. 3,804,864, Cl. 260-396.00r.
Rutledge, Thomas F., to ICI America Inc. Method of preparing self-condensation products of alkylphenols. 3,804,865, Cl. 260-396.00n.
Rutman, Grigory Iosifovich: *See—*
Liakumovich, Alexandr Grigorievich; Linkov, Alexei Dmitrievich; Rutman, Grigory Iosifovich; Michurov, Jury Ivanovich; Belgorodsky, Izrail Markovich; Sire, Efim Moiseevich; and Pantukh, Boris Izrailevich, 3,804,911.
Ruttgers, Helge; and Lussem, Heribert, to Hewlett-Packard GmbH. Device for obtaining measurement at or within parts of the human body. 3,804,080, Cl. 128-2.06e.
Ryabinin, Vladimir Alexandrovich; Sadofiev, Vladimir Ivanovich; Milin, Igor Mikhailovich; Yankevich, Kira Boleslavovna; Matrosov, Evgeny Ivanovich; Leliovsky, Anton Flixovich; Terra, Larl Romanovich; and Kashirin, Alexei Petrovich. Microwave electron tube. 3,805,111, Cl. 315-39.000.
Ryan, Stephen A. Game board and game pieces positionable upon the board in a limited number of positions. 3,804,415, Cl. 273-130.00r.
Ryckman, George E.; and Budd, Walter J., to Uniroyal, Inc. Tensile testing apparatus. 3,803,907, Cl. 73-95.000.
Ryhage, Erik Ragnar, to LKB-Produkter AB. Molecule separator. 3,803,811, Cl. 55-197.000.
S.A. Cockerill-Ougree-Providence et Esperance Longdoz en Abrege, "Cockerill": *See—*
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Sadofiev, Vladimir Ivanovich: *See—*
Ryabinin, Vladimir Alexandrovich; Sadofiev, Vladimir Ivanovich; Milin, Igor Mikhailovich; Yankevich, Kira Boleslavovna; Matrosov, Evgeny Ivanovich; Leliovsky, Anton Flixovich; Terra, Larl Romanovich; and Kashirin, Alexei Petrovich, 3,805,111.
Sagami Chemical Research Center: *See—*
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Saint, David, to Graco Metal Products, Inc. Motor driven cradles and the like. 3,804,407, Cl. 272-86.000.
Saint-Godain Industries: *See—*
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Saito, Takao; Kataoka, Toshimitsu; and Yamawaki, Siro, to Anritsu Electric Co., Ltd. Remaining pin detecting apparatus of a bowling machine. 3,804,408, Cl. 273-54.00e.
Sakai, Takeo: *See—*
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Sakakibara, Kozo; and Yasuda, Kiyoshi, to Daicel Ltd. Process for producing acetone. 3,804,902, Cl. 260-593.00r.
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Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 3,804,512.

Sakamoto, Kenro; Fushiki, Isamu; Shimizu, Fumio; and Tozawa, Katsutoshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material. 3,804,633, Cl. 96-109.000.

Sakasegawa, Hiroshi; Iizuka, Mitsuru; and Senju, Takenori, to Nissan Motor Comapny, Limited. Liquid coolant level dron alarming system. 3,805,230, Cl. 340-59.000.

Sakurai, Yo, to Hitachi, Ltd. Magnetic head having improved head gap portion. 3,805,291, Cl. 360-120.000.

Sallman, Alfred; and Pfister, Rudolf, to Ciba-Geigy Corporation. 2-Anilinophenylacelonitriles. 3,804,877, Cl. 260-465.00d.

Salukvadze, Viktor Samsonovich; and Musyakin, Vyacheslav Egorovich. Apparatus for cleaning strip material. 3,803,661, Cl. 15-77.000.

Samelson, Harold: *See—*
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Sameilov, Sergei Mikhailovich; Plate, Nikolai Aefredovich; Maltsev, Vadim Vasilievich; Monastyrsky, Viktor Nikolaevich; and Kargin, Valentin Alexeevich; deceased (by Velichko, Kaleria Petrovna; administratrix). Copolymers of ethylene with organovinyltin moomers. 3,804,816, Cl. 260-88.10r.

Sanchez, Ronald. Illuminated spinning top having removable sub-assembly for mounting battery and bulb. 3,803,757, Cl. 46-228.000.

Sand, Robert T., Sr. Tire construction. 3,804,144, Cl. 152-313.000.

Sandberg, Harry W.: *See—*
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Sandberg, Robert G. Bottom step unit for boat ladders. 3,804,200, Cl. 182-91.000.

Sander, Charles. Movable game board. 3,804,418, Cl. 273-136.00r.

Sandoz Ltd.: *See—*
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Sandoz-Wander, Inc.: *See—*
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Sandvist, Hugo; and Nygaard, Tore, to Allmanna Svenska Elektriska Aktiebolaget. Gas blast circuit breaker for high voltages. 3,805,001, Cl. 200-148.0bv.

Sanford, Robert F.: *See—*
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Sanibel Sound Co., Inc.: *See—*
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Sanigar, William George, to International Computers Limited. Document handling system. 3,805,025, Cl. 235-61.60h.

Santiago, Andres, to Zeuna-Staerker KG. Method for the detoxification of exhaust gases of internal combustion engines. 3,803,839, Cl. 60-274.000.

Santoli, Michael. Security license plate for vehicles. 3,805,231, Cl. 340-63.000.

Sanwa Tetsuki Kougiyou Kabushiki Kaisha: *See—*
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Sarnoff, Caron. Post cosmetic surgery protector. 3,804,087, Cl. 128-163.000.

Sasai, Koji: *See—*
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Sato, Akio: *See—*
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Sato, Masamichi: *See—*
Fukushima, Osamu; and Sato, Masamichi, 3,804,062.

Sato, Masamichi; and Fukushima, Osamu. Imaging developing system. 3,804,510, Cl. 355-10.000.

Sato, Masamichi; Tamai, Yasuo; Fukushima, Osamu; Matsumoto, Seiji; and Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Electrophotographic reversal development process for enhancing the quality of the developed image. 3,804,659, Cl. 117-37.0le.

Satomura, Masato: *See—*
Osada, Chiaki; Satomura, Masato; and Ono, Hisatake, 3,804,628.

Sawada, Tsutomu; and Oguma, Masaaki, to Nissan Motor Company, Limited. Bumper spring support assembly. 3,804,444, Cl. 293-87.000.

Sawant, Ulhas S.: *See—*
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Sawatzky, Gerhard. Pin type cleaning device. 3,803,659, Cl. 15-3.000.

Sawyer, Edgar W., Jr.: *See—*
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Sawyer, Harold T., 20% interest to Beehler, Vernon D. Industrial carpet and floor conditioner. 3,803,666, Cl. 15-320.000.

Sawyer, Thomas E.: *See—*
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Scaduto, John R. Cam control tool for machining a rotatable workpiece. 3,803,956, Cl. 82-19.000.

Scarnato, Thomas J.: *See—*
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Scarpellino, Richard: *See—*
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Scarr, John: *See—*
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Schachner, Dennis W. Kicking practice aid. 3,804,409, Cl. 273-55.00b.

Schafer, Thomas C.: *See—*
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Scharf, Edward Jonathan: *See—*
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Volodarskaya, Nadezhda Antonovna; Scheglov, Jury Ventiaminovich; Melnikova, Iraida Alexandrovna; Melnikov, Nikolai Nikolaevich; Baskakov, Jury Alexandrovich; Stonov, Leonid Dmitrievich; Bakumenko, Ljdmila Alexandrovna; Grabovskaya, Asya Mikhailovna; and Kaakova, Alentina Grigorievna, 3,804,611.

Scheit, Karl-Heinz; and Fafrber, Peter, to Merck Patent Gesellschaft mit beschrankter Haftung. Thiopyrimidine derivatives. 3,804,826, Cl. 260-211.50r.

Schenck, Carl, Maschinenfabrik, G.m.b.H., Firma: *See—*
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Schenten, James L., to Chrysler Corporation. Adjustable tiltable steering column. 3,803,939, Cl. 74-493.000.

Schepotiev, Alexandr Ivanovich: *See—*
Benderovsky, Valdimir Valerianovich; Yastrebov, Igor Alexandrovich; Schepotiev, Alexandr Ivanovich; Korneichuk, Viktor Mikhailovich; Vergiliev, Oleg Mikhailovich; and Lysenko, Alexei Petrovich, 3,804,352.

Scherenberg, Hans O.; Rothweiler, Alfred; and Waxenberger, Erich, to Daimler-Benz Aktiengesellschaft. Wheel suspension for vehicles. 3,804,433, Cl. 280-106.50r.

Scherzinger, Earl S., to Philco-Ford Corporation. Combination brake and roller for cabinet structure. 3,804,211, Cl. 188-5.000.

Schilling, Hans-Dieter: *See—*
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Schjeldahl, G. T., Company: *See—*
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Schlafhorst, W., & Co.: *See—*
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Schlatter, Gerald Lance, to International Telephone and Telegraph Corporation. Transformer coupled signal power feedback circuit. 3,805,174, Cl. 328-261.000.

Schmalfeld, Paul; Bock, Burkhard; and Schilling, Hans-Dieter, to Metallgesellschaft Aktiengesellschaft and Bergwerksverband GmbH. Process of thermally treating fine-grained solids in an internally heated fluidized bed. 3,804,581, Cl. 432-58.000.

Schmid, Karl; Schauerte, Karlheinz; Kirchhof, Hans Werner; Gelbe, Horst; Tilgner, Hans Georg; and Wenderoth, Richard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Purification of paraxylene. 3,804,915, Cl. 260-674.00a.

Schmidhuber, Klaus; Link, Wolfgang; and Sturm, Heribert. Fluid distributor. 3,804,337, Cl. 239-513.000.

Schmidt, Donald L.: *See—*
Broxterman, William E.; Schmidt, Donald L.; and Evani, Syamalarao, 3,804,797.

Schmidt, Erich A.; and Schmidt, Volker B., to Textron, Inc. Control system for assembling apparatus. 3,803,698, Cl. 29-208.00c.

Schmidt, Ulrich K.: *See—*
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Schmidt, Volker B.: *See—*
Schmidt, Erich A.; and Schmidt, Volker B., 3,803,698.

Schmieler, William L. Sanitary scavenging implement. 3,804,448, Cl. 294-19.00r.

Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dieter, to Espe Fabrik Pharmazeutischer Praparate GmbH. Aqueous zinc oxide-dicarboxylic acid polymer dental cement. 3,804,794, Cl. 260-29.60m.

Schneider, Christian P.: *See—*
Philbrick, John W.; Pillus, Charles A.; Poponiak, Michael R.; and Schneider, Christian P., 3,805,160.

Schneider, Marvin, to Panokraft Corporation of Canada Limited. Spline for glass fiber reinforcement for a building made from prescored-flat sheet material. 3,803,786, Cl. 52-233.000.

Schneider, Thomas A., to House of Doors, Inc. Measuring instrument. 3,803,718, Cl. 33-107.00r.

Schneidhofer, Adolf. Apparatus for electroslag-remelting of metals, in particular, steel. 3,804,148, Cl. 164-252.000.

Schoeffler, William N. Valved jet device for well drills. 3,804,186, Cl. 175-317.000.

Schoeller & Co. KG: *See—*
Horn, Jergen; Holstein, Hans-Wilhelm; and Betker, Alexander, 3,804,196.

Scholes, Thomas: *See—*
Winterburn, Charles Barry; and Scholes, Thomas, 3,803,665.

Scholl, Ronald F.; and Bleha, William P., Jr., to Hughes Aircraft Company. Cadmium sulfide thin film sustained conductivity device with cermet schottky contact. 3,805,128, Cl. 317-235.0ua.

Schrader, William P., to Cleasby Mfg. Co., Inc. Melting kettle and apparatus and method for eliminating objectionable emissions therefrom. 3,804,079, Cl. 126-343.50a.

Schrage, Albert; and Finestone, Arnold B., to Dart Industries, Inc. Synergistic blends of modified polyolefins and unmodified polyolefins. 3,804,919, Cl. 260-827.000.

Schreiber, Charles L.: *See—*
Abeel, Joseph A.; and Schreiber, Charles L., 3,803,762.

Schreiber, Kurt: *See—*
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Schromm, Kurt: *See—*
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Schroter, Hans-Jurgen; Juntgen, Harald; Zundorf, Dieter; and Knoblauch, Karl, to Bergwerksverband GmbH. Process for retarding flowing radioactive noble gases. 3,803,802, Cl. 55-66.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Niestroj, Heinrich; Landwehrkamp, Hans; and Hoeber, Gerhard, 3,803,823.

Schuerman, Victor F.; and Engebretsen, Einar O., to Hobert Manufacturing Company, The. Compactor cycle control. 3,805,084, Cl. 307-112.000.

Schuldt, Theodore J., Jr.: *See—*
Manke, Girard M.; Tribuno, Robert; Hattendorf, Edwin R.; and Schuldt, Theodore J., Jr., 3,805,033.

Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., to Bendix Corporation, The. Liquid hydrostatic gyro gimbal support. 3,803,924, Cl. 74-5.00r.

Schuller, Fredrick T.; and Moore, Warren A., to United States of America, National Aeronautics and Space Administration. Journal bearings. 3,804,472, Cl. 308-73.000.

Schultz, Elmer J.: *See—*
Foster, Jimmie J. L.; and Schultz, Elmer J., 3,805,235.

Schulz, Dieter: *See—*
Iseli, Jakon; Tenchio, Georges; and Schulz, Dieter, 3,805,241.

Schumacher, Frank A., to General Electric Company. Refrigerator including automatic ice maker. 3,803,862, Cl. 62-137.000.

Schuur, Cornelis Christianus Maria, to U.S. Philips Corporation. Device for writing subwords into a store in an inverted or non-inverted form. 3,805,254, Cl. 340-172.500.

Schwab, Arthur W., to United States of America, Agriculture. Preparation of carboxy alkanoic acids and esters. 3,804,895, Cl. 260-530.00r.

Schwarz, Eckhard C. A.; and Kohl, Robert T., to Kimberly-Clark Corporation. Polymers having improved extrusion and cold-stretching properties and method and composition for obtaining such polymers. 3,804,926, Cl. 260-897.00a.

Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, to Krauss-Maffei Aktiengesellschaft. Electromagnetic suspension and guide system for magnetically suspended vehicles. 3,804,022, Cl. 104-148.0ms.

Schwarzler, Peter; Winkle, Gunter; and Molzer, Peter, to Krauss-Maffei Aktiengesellschaft. Contact system for high-speed electrically operated vehicles. 3,804,997, Cl. 191-48.000.

SCM Corporation: *See—*
Cappotto, Samuel D.; Diamond, Herrick R.; and Zeamer, Aaron C., 3,804,227.
Eppler, Richard Andrew; and O'Conor, Eugene F., 3,804,666.
Wengrow, Henry R.; Stoufer, Wilmer B.; Morris, Charles W.; Leavens, Dwight E.; and Watkins, Gerald S., 3,804,819.

Scott, Charles D., to United States of America, Atomic Energy Commission. Rotor for fluorometric measurements in fast analyzer of rotary. 3,804,533, Cl. 356-197.000.

Scott, David B.: *See—*
Shaffer, Frederick; and Scott, David B., 3,803,776.

Scott, David J., to Air Products and Chemicals, Inc. Apparatus and method for producing gaseous moisture calibration standards. 3,804,595, Cl. 23-288.00j.

Scott, James Edwin, Jr.: *See—*
Balocca, Alfred Edward; Brincks, Richard Joseph; and Scott, James Edwin, Jr., 3,804,287.

Scott, Kenneth Thomas Bartlett; Grimes, John Herbert; and Ball, Peter William, to United Kingdom Atomic Energy Authority. Processes for extracting metal values from solutions. 3,804,945, Cl. 423-658.500.

Scott, Milton B. Mini-theater. 3,804,504, Cl. 353-77.000.

Scott, Robert C.; and Flinchum, John A., to Piper Aircraft Corporation. Condenser installation for aircraft air-conditioning system. 3,804,353, Cl. 244-57.000.

Scott, William Wayne. Audio visual educational device. 3,803,728, Cl. 35-8.00a.

Scovill Manufacturing Company: *See—*
Mrak, Dusan, 3,803,717.

Scragg, Ernest & Sons Limited: *See—*
Waterhouse, George, 3,803,675.

Searight, Edward F.; and Brosens, Pierre J., to Thermo Electron Corporation. Jet impingement fin coil. 3,804,159, Cl. 165-109.000.

Seasafe Transport AB: *See—*
Trostad, per Olof, 3,803,653.

Seaton, Thomas: *See—*
Bowden, Roy Dennis; and Seaton, Thomas, 3,804,840.

See, George L.; and Waggoner, John B., to Caterpillar Tractor Company. Vehicle roll-over safety apparatus. 3,804,435, Cl. 280-150.0ab.

Seem, Warren A.; and Conrad, Robert F. Method and apparatus for heating thermoplastic yarn. 3,803,674, Cl. 28-62.000.

Segawa, Toru: *See—*
Tokushige, Kenichi; Segawa, Toru; Uda, Kiminori; Tada, Hideho; Anodo, Teisuke; Yamamoto, Hiroya; and Hashimoto, Noburo, 3,804,684.

Seidel, William B., to Cincinnati Milacron Inc. Machine tool. 3,803,704, Cl. 29-568.000.

Seifert, Edwin A., Jr. Air induction apparatus for seed drill tube. 3,804,036, Cl. 111-1.000.

Sekmakas, Kazys, to De Soto, Inc. Water-dispersible cationic polyurethane resins. 3,804,786, Cl. 260-18.0pt.

Sekmakas, Kazys, to De Soto, Inc. Externally catalyzed thermosetting coating compositions comprising alkylolated amide interpolymers of high acid content in combination with low molecular weight polyhydric alcohols. 3,804,790, Cl. 260-29.6ta.

Sell, William Henry, Jr., to Isotopes, Inc. Thermoelectric generator with thermal expansion block. 3,804,676, Cl. 136-205.000.

Sellers, Edward C.: *See—*
Rait, Joseph M.; Gilmour, Alexander Scott, Jr.; and Sellers, Edward C., 3,804,511.

Semler, Charles E., to United States of America, The. Lime silicophosphate cement. 3,804,651, Cl. 106-85.000.

Sendai, Kazuhiko: *See—*
Shibuya, Akira; Takayama, Susumu; Nitta, Yoshifumi; Sendai, Kazuhiko; and Yana, Masaharu, 3,803,808.

Senju, Takenori: *See—*
Sakasegawa, Hiroshi; Iizuka, Mitsuru; and Senju, Takenori, 3,805,230.

Sennet, Morgan B.; and Bond, Morton K., to DeLaval Turbine Inc., mesne. Screw pumps. 3,804,565, Cl. 418-201.000.

Sergeichik, Vladimir Adamovich: *See—*
Gelfand, Mikhail Lvovich; Isipenjuk, Yakov Isaakovich; Podlesnykh, Petr Ivanovich; Sergeichik, Vladimir Adamovich; Rutgaizer, Mikhail Isaakovich; and Antipov, Georgy Afanasievich, 3,804,180.

Serini, Henry O.; and Sutterfield, Douglas, to Universal Tackle Corporation Inc. Apparatus for controlling the tension of the line in a fishing reel. 3,804,349, Cl. 242-84.50a.

Serio, John P.: *See—*
Mammino, Joseph; Jossel, Franklin; Kobey, James M.; Serio, John P.; Solodar, Warren E.; and Walker, Alan H., 3,804,619.

Serra, Jean, to A.R.M.I.R.E.S., Association pour la Recherche et le Developpement des Methodes et Processus Industriels. Device for the logical analysis of textures. 3,805,035, Cl. 235-151.300.

Seybold, Rolf. Securing device for vehicle safety belts. 3,804,396, Cl. 267-166.000.

Sgambati, Robert J.: *See—*
Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., 3,803,924.

Shaffer, Frederick; and Scott, David B., to Westinghouse Electric Corporation. Method for treating surfaces of zirconium alloy tubes. 3,803,776, Cl. 51-326.000.

Shaffer, Walter M., to Towmotor Corporation. Auxiliary-powered wheel unit for dirigible wheel applications. 3,804,190, Cl. 180-44.00f.

Shamos, Morris H.: *See—*
Smythe, William J.; and Shamos, Morris H., 3,804,593.

Shapiro, Robert C.: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Shell Oil Company: *See—*
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Arnold, Kenneth R.; and Frischmuth, Robert W., Jr., 3,804,145.
Closmann, Philip J., 3,804,169.
Closmann, Philip J.; and Suman, George O., Jr., 3,804,172.
Darley, Henry C. H., 3,804,760.
Fernandez-Luque, Refael; and Goppel, Johan M., 3,803,852.
Miller, Alexander, Jr.; Anderson, Victor F.; Holt, Raymond W.; and Fortenbach, Robert W., 3,804,330.

Sheman Universal Corporation: *See—*
Warrener, Paul H., 3,804,446.

Shenker, Dmitry Dmitrievich: *See—*
Berlin, German Semenovich; Potapov, Nikolai Akimovich; and Shenker, Dmitry Dmitrievich, 3,805,190.

Shepard, John C., Jr., to Nalco Chemical Company. Method of producing trialkyl lead fluoroborates. 3,804,872, Cl. 260-437.00r.

Shepard, John W.; and Juveland, Omar O., to Standard Oil Company. Polymerization process. 3,804,917, Cl. 260-683.15r.

Sherwin-Williams Company, The: *See—*
Cunningham, Arthur L.; Damon, John E.; Bohatiuk, Zenon P.; Mathai, John; and Holton, Howard D., 3,804,920.
Grivas, John C., 3,804,806.

Shiba, Keisuke; Kubodera, Seiiti; and Sakai, Takeo, to Fuji Photo Film Co., Ltd. Photographic supersensitized silver halide emulsion. 3,804,634, Cl. 96-125.000.

Shibuya, Akira; Takayama, Susumu; Nitta, Yoshifumi; Sendai, Kazuhiko; and Yana, Masaharu, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Two-stage type of electric dust arrester. 3,803,808, Cl. 55-123.000.

Shima, Seiya: *See—*
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Shimizu, Fumio: *See—*

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Shimizu Kensetsu Kabushiki Kaisha: *See*—
Kato, Takashi; Takehashi, Isao; Wakamatsu, Kojiro; and Shimizu, Yashuhiko, 3,804,942.
Shimizu, Noriaki. Dial for wrist watch and a method of making the same. 3,803,832, Cl. 58-127.00b.
Shimizu, Yashuhiko: *See*—
Kato, Takashi; Takahashi, Isao; Wakamatsu, Kojiro; and Shimizu, Yashuhiko, 3,804,942.
Shimoda, Mitsuhiko: *See*—
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Shinpaugh, William H.: *See*—
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Shintani, Sotokichi: *See*—
Kawai, Kazuo; Shintani, Sotokichi; and Yanagindaira, Hidetaka, 3,805,191.
Shiozaki, Tomoharu; and Kono, Jujiro, to Kanzaki Paper Mfg. Co., Ltd. Method of preparing microcapsules. 3,804,775, Cl. 252-316.000.
Shive, Howard J.: *See*—
Brown, Thomas E.; Brotherton, Richard M.; and Shive, Howard J., 3,804,277.
Shkatov, Evgeny Filippovich; Zhukov, Jury Petrovich; and Kozlov, Alvin Germanovich. Device for measuring the rate of flow of dust-laden gases. 3,803,911, Cl. 73-194.00r.
Shoemaker, Leon H., to National Mine Service Company. Dual braking system for a mining locomotive. 3,804,214, Cl. 188-107.000.
Shoffa, Vadim Nikolaevich. Hermetically sealed overcurrent relay. 3,805,201, Cl. 335-204.000.
Shomura, Takashi: *See*—
Koaze, Yoshihisa; Nakajima, Yotaka; Hidaka, Hideimasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,804,717.
Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Self-timer. 3,804,204, Cl. 185-39.000.
Short, Thomas W., to Levitz Furniture Corporation. Mezzanine-storage warehouse with integral retail showroom facilities. 3,803,778, Cl. 52-33.000.
Showa Denko K.K.: *See*—
Tokushige, Kenichi; Segawa, Toru; Uda, Kiminori; Tada, Hideho; Anodo, Teisuke; Yamamoto, Hiroya; and Hashimoto, Noburo, 3,804,684.
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Shteinfeld, Boris Grigorievich: *See*—
Lamm, Eduard Lvovich; Kljueve, Galina Vasilieva; and Shteinfeld, Boris Grigorievich, 3,803,723.
Siegrist, Adolf Emil, to Ciba-Geigy AG. New triazole derivatives. 3,804,773, Cl. 252-301.20w.
Siekiewicz, Boleslaw; and Bagley, Ferdinand A., to General Foods Corporation. Process for agglomeration. 3,804,963, Cl. 426-453.000.
Siemens AG: *See*—
Mahlein, Hans, 3,804,487.
Siemens Aktiengesellschaft: *See*—
Blaschke, Felix, 3,805,135.
Bock, Rudolf; and Wagner, Gerhard, 3,805,264.
Kaiser, Walter, 3,805,090.
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Keller, Wolfgang, 3,804,682.
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Massar, Ernst; and Bogner, Gunther, 3,804,023.
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Silbermann, Erich, 3,805,220.
Sihi G.m.b.H. & Co. KG: *See*—
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Silbermann, Erich, to Siemens Aktiengesellschaft. Electrical contact pin receptacle element. 3,805,220, Cl. 339-2568.00f.
Sillion, Bernard: *See*—
Haemmerly, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,804,852.
Silver-Top Manufacturing Company, Inc.: *See*—
Struben, Francis L., 3,803,781.
Simane, Zdenek: *See*—
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,804,839.
Simicich, Esperanto J.: *See*—
Tarjan, Peter F.; Goldstein, Jacob; and Simicich, Esperanto J., 3,804,082.
Simmonds Precision Products, Inc.: *See*—
Gallant, George A., 3,805,153.
Simmons, J. V. Safety door guard. 3,804,454, Cl. 292-262.000.
Simon, Michael, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Gas transfer system for liquid fuels. 3,803,858, Cl. 62-52.000.
Simoudis, John C., to Continental Can Company. Cobalt alloy steel composite article. 3,804,602, Cl. 29-195.500.
Simpson, William Leslie, to Newey Goodman Limited. Sewing machine attachments. 3,804,039, Cl. 112-105.000.
Sims, Anson: *See*—
Jones, Lawrence T.; and Sims, Anson, 3,804,416.
Sims, Homer J.: *See*—
De Benneville, Peter L.; Godfrey, William J.; and Sims, Homer J., 3,804,821.
Sims, Robert J., to Westinghouse Electric Corporation. Suds saving system for automatic washer. 3,804,588, Cl. 8-158.000.
Singer Company, The: *See*—
Arnold, Bruce E., 3,804,040.
Coulombe, Lionel J., 3,804,041.
Goetz, Lawrence R., 3,804,044.
Ross, Roger J., 3,804,042.
West, Herman H.; and Nofsinger, Ralph G., 3,804,484.
Sinn, Hartmut; and Stallmann, Hans, to Heraeus-Christ GmbH. Table top, noise suppressed centrifuge. 3,804,324, Cl. 233-24.000.
Sioux Corporation: *See*—
Finger, John F., 3,804,063.
Sire, Efim Moiseevich: *See*—
Liakumovich, Alexandr Grigorievich; Linkov, Alexei Dmitrievich; Rutman, Grigory Iosifovich; Michurov, Jury Ivanovich; Belgorodsky, Izrail Markovich; Sire, Efim Moiseevich; and Pantukh, Boris Izrailevich, 3,804,911.
Sisko, Clifford A.: *See*—
Tunzi, Joseph P.; and Sisko, Clifford A., 3,803,868.
Sissom, John E. Projector and indicator coordinating apparatus. 3,804,503, Cl. 353-15.000.
Sitnikov, Leonid Semenovich: *See*—
Borisov, Kostantin Grigonievich; Kuzemko, Vitaly Stepanovich; Sitnikov, Leonid Semenovich; Tokovenko, Stepan Emelyanovich; and Utyakov, Lev Lazarevich, 3,805,029.
Sivaslian, Armen H., to North American Rockwell Corporation. Shock strut. 3,804,394, Cl. 267-34.000.
Sjovall, Jan: *See*—
Bergstrom, Sun; and Sjovall, Jan, 3,804,880.
Bergstrom, Sune; and Sjovall, Jan, 3,804,879.
Skardal, Karl Arvid. Toroidal vortex cleaner. 3,804,244, Cl. 209-211.000.
Skater Fountain Pen Co., Ltd., The: *See*—
Torii, Osamu; Torii, Sugako; and Hashimoto, Yasuyuki, 3,804,536.
SKF Industrial Trading and Development Company N.V.: *See*—
Diem, Rudolf; and Meurer, Horst, 3,803,904.
Skutt, Thomas; and Finn, Frank John, to Plessey Handel und envestments A.G. Devices for making wrapped-wire connections. 3,803,649, Cl. 7-14.10r.
Slavin, Harry. Friction bumper. 3,804,447, Cl. 293-89.000.
Slavin, Michael; Carp, Ralph W.; and Schafer, Thomas C., to Bendix Corporation, The. Speed logic for an adaptive braking system. 3,804,470, Cl. 303-21.0be.
Sloane, Theodore A.: *See*—
Lopata, Ira, L.; Hoerner, Jacob W.; and Sloane, Theodore A., 3,804,498.
Sly, Larry D., to United States of America, Army, mesne. Memory packaging design and fabrication technique. 3,804,692, Cl. 156-306.000.
Smith, Daryl L.: *See*—
Lechaton, John S.; Richard, Leo P.; and Smith, Daryl L., 3,804,738.
Smith, G. D., Inter Ocean Inc.: *See*—
Coates, Harvey W., 3,804,065.
Smith, Henry: *See*—
Thiene, Carl G.; and Smith, Henry, 3,804,014.
Smith, Jack T., 25% to Dunn, Robert T. System for remote reading the angular position of a surface by detecting polarized light reflected therefrom. 3,804,522, Cl. 356-114.000.
Smith, North; and Pazsint, Daniel A., to United States of America, Army. Insulative structural material. 3,804,702, Cl. 161-168.000.
Smith, Richard D., to Cheateau Wine Cellar Company. Wine storage cabinet assembly. 3,804,482, Cl. 312-236.000.
Smith, Richard Terence, to Rubery, Owen & Co., Limited. Load carrying vehicles. 3,804,189, Cl. 180-24.020.
Smith, Russell Yerby, Jr.: *See*—
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Smith, S. R., Co., Inc.: *See*—
Giddings, Donald W., 3,804,405.
Smith, William, to Steel Company of Canada Limited, The. Method for rolling hot metal workpieces. 3,803,891, Cl. 72-231.000.
Smithkline Corporation: *See*—
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Smyth, Robert M.: *See*—
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Smythe, William J.; and Shamos, Morris H., to Technicon Instruments Corporation. Automatic analysis apparatus and method. 3,804,593, Cl. 23-230.00r.
Societa Italiana Resine S.p.A.: *See*—
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Societe Anonyme des Usines Chausson: *See*—
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Societe Anonyme dite: Aquitaine-Total Oranico Tour Aquitaine: *See*—
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Societe Civile d'Etudes de Centrifugation: *See*—
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Societe Italiana Telecomunicazioni Siemens S.p.A.: *See*—
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Societe Nationale d'Etude et de Constructions de Motorens d'Aviation: *See—*
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Societe Neuvelle Baile Ganghoff Racine Villeurbarne: *See—*
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Societe Rhone-Progil: *See—*
Ramanadin, Salindres, 3,804,778.

Soejima, Kazuo; Sugahara, Takeshi; Fukuda, Kazuo; and Hashimura, Kazuya, to Nippon Oil and Fats Co., Ltd. Tubular composite welding wire filled with potassium compounds containing flux. 3,805,016, Cl. 219-146.000.

Sohre, John S. Vaneless supersonic nozzle. 3,804,335, Cl. 239-289.000.

Soileau, Hosea J. Adjustable water level and erosion control device. 3,803,851, Cl. 61-17.000.

Sola Basic Industries, Inc.: *See—*
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Solodar, Warren E.: *See—*
Mammino, Joseph; Jossel, Franklin; Kobey, James M.; Serio, John P.; Solodar, Warren E.; and Walker, Alan H., 3,804,619.

Solvay & Cie: *See—*
Del Piero, Elio, 3,804,573.

Sommermeyer, Heinrich. Fluid flow filter unit with magnetic and/or mechanical filter means. 3,804,257, Cl. 210-335.000.

Sonderhouse, Ronald G.: *See—*
Kaiser, Herbert R.; and Sonderhouse, Ronald G., 3,804,824.

Sone, Katsumi: *See—*
Yamada, Keizo; and Sone, Katsumi, 3,804,302.

Sonneman, George B., to Bendix Corporation, The. Pump pulsation dampener. 3,804,125, Cl. 138-30.000.

Sonnenberg, Charles W.: *See—*
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Sonoda, George: *See—*
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Sorenson, Marius W.: *See—*
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Sorli, Duncan C., to Polaroid Corporation. Photographic film unit cassette. 3,804,625, Cl. 96-67.000.

Southern Machinery Company: *See—*
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Sowinski, Francis Alexander: *See—*
Bernstein, Jack; and Sowinski, Francis Alexander, 3,804,894.

Spanel, Abram Nathaniel. Hair cutters featuring rotatable blade. 3,803,712, Cl. 30-30.000.

Specialty Coatings & Chemicals, Inc.: *See—*
Jacoby, Henry C.; Jacoby, Abraham; and Jacoby, David, 3,804,685.

Spectra-Physics, Inc., mesne: *See—*
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Speece, Richard E. Recycling gas contact apparatus. 3,804,255, Cl. 210-194.000.

Sperry Rand Corporation: *See—*
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Donahue, John A ; and Minden, Henry T., 3,804,060.

Sperry Rand Limited: *See—*
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Marshall, John Stephen, 3,804,123.

Sperry-Sun Well Surveying Company: *See—*
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Sperti Drug Products, Inc.: *See—*
Uroshevich, Miroslav, 3,804,355.

Spiegel, Norman, to Nasta Industries, Inc. Flashlight device. 3,805,050, Cl. 240-10.00f.

Splakman, Eugene R., to McDonnell Douglas Corporation. Ring pad stress coining tooling. 3,803,898, Cl. 72-416.000.

Sprague, Richard Galen: *See—*
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Sprague, Robert A., to Itek Corporation. Optical device for measuring surface roughness. 3,804,521, Cl. 356-109.000.

Sprecher & Schuh AG: *See—*
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Spreckels, Charles C.: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
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Denzel, Theodor; and Hoehn, Hans, 3,804,843.

Stach, Kurt: *See—*
Wiedemann, Fritz; Thiel, Max; Stach, Kurt; Roesch, Egon; and Hardebeck, Klaus, 3,804,835.

Staedtler, J. S.: *See—*
Mutschler, Otto, 3,804,540.

Stahle, Helmut; Koppe, Herbert; Summer, Werner; and Hoefke, Wolfgang, to Boehringer Ingelheim GmbH. 2-Phenylimino-imidazolidines their 2-anilino-2-imidazoline tautomers and salts thereof. 3,804,833, Cl. 260-253.000.

Stallmann, Hans: *See—*
Sinn, Hartmut; and Stallmann, Hans, 3,804,324.

Stamicarbon N.V.: *See—*
Vellinga, Meindert B.; Hartog, Frits; and Von den Hoff, Johan P. H., 3,804,912.

Standard Oil Company: *See—*
Shepard, John W.; and Juveland, Omar O., 3,804,917.

Standard Oil Company, The: *See—*
Callahan, James L.; Hardman, Harley F.; and Grasselli, Robert K., 3,804,756.

Standard Paint & Varnish Company: *See—*
Trulsson, Nils Olof; and Lagos, Dickens Mario, 3,804,639.

Standard Pressed Steel Co.: *See—*
Dahl, Warren F., 3,803,793.

Standley, Robert Dean: *See—*
Li, Tingye; and Standley, Robert Dean, 3,804,489.

Stanford Research Institute: *See—*
Crane, Hewitt D.; and Cornsweet, Tom N., 3,804,496.

Stange, Klaus K., to Xerox Corporation. Pneumatic stripping apparatus. 3,804,401, Cl. 271-80.000.

Stanley Denki Kabishiki Kaisha: *See—*
Kishi, Yasunori; Kobayashi, Junio; Yamaguchi, Masami; and Okamoto, Tsuneo, 3,805,185.

Stanley Works, The: *See—*
Whale, Clarence F., Jr., 3,803,952.

Stark, Gary K.: *See—*
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,804,268.

Stark, Karl-Heinz: *See—*
Faber, Egon; Jaksch, Ernst; and Stark, Karl-Heinz, 3,804,047.

State of Colorado, Department of Natural Resources Division of Wildlife, The: *See—*
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Statz, Horst F.: *See—*
Drangeid, Karsten E.; Mohr, Theodor O.; Statz, Horst F.; and Von Muench, Waldemar, 3,804,681.

Staudt, Heinrich; Hofmann, Eberhard; and Knorreck, Peter, to Bosch, Robert, G.m.b.H. Support and guide means for the fuel rack contained in a fuel injection pump. 3,804,559, Cl. 417-499.000.

Steadman, Howard L., to Tymshare, Inc. Error checking method and apparatus for group of control logic units. 3,805,233, Cl. 340-146.0ag.

Stechmann, Helmut, to Kienzle Uhrenfabriken GmbH. Electronic circuit for stabilizing the swing amplitude of a mechanical vibrating system. 3,805,132, Cl. 318-130.000.

Stecker, Edmund J. Frame hangers. 3,804,360, Cl. 248-489.000.

Steel Company of Canada Limited, The: *See—*
Smith, William, 3,803,891.

Steelastic Company, The: *See—*
Alderfer, Sterling W., 3,803,965.

Steffen, Jurg: *See—*
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Stendel, Wilhelm: *See—*
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Stepanov, Grigory Nikolaevich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Alexandr Emelyanovich; Nikolaenko, Evgeny Gritorievich; Sepanov, Grigory Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,804,151.

Stephenson, Emmett: *See—*
Stuppy, Francis X.; and Stephenson, Emmett, 3,803,671.

Sterrett, John D.; and Baeslack, Alfred J., to Westinghouse Electric Corporation. System and method for controlling gauge and crown in a plate rolling mill. 3,803,886, Cl. 72-8.000.

Sterzer, Fred, to RCA Corporation. Semiconductor memory element. 3,805,125, Cl. 317-234.00v.

Steudler, Frederick W., Jr., to Vallorbs Jewel Company. Water fountain. 3,804,068, Cl. 119-81.000.

Steven, Gary: *See—*
Bratt, Richard W.; and Steven, Gary, 3,803,702.

Stevens, Walter Chandler, Jr.: *See—*
Ridenour, Ralph G.; and Stevens, Walter Chandler, Jr., 3,803,897.

Stevenson, William H., III, to Ocean Trove Development Corporation. Method for rehydrating dried foodstuffs. 3,804,959, Cl. 426-376.000.

Stewart, James E. Weatherproofing cover for roadbed. 3,803,777, Cl. 52-11.000.

Stiffler, Jack J., to Raytheon Company. High reliabiltiy system employing subelement redundancy. 3,805,039, Cl. 235-153.0ae.

Stiglich, Jacob J., Jr., to Boride Products, Inc. Armor. 3,804,034, Cl. 109-80.000.

Stikkelbroeck, Josephus Gerardus Henricus: *See—*
Gommans, Huberts Johannes Josephus; and Stikkelbroeck, Josephus Gerardus Henricus, 3,804,972.

Stiles, Janice L.: *See—*
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Stocker, Hermann Walter: *See—*
Coon, Lewis Buel, Jr.; and Stocker, Hermann Walter, 3,805,284.

Stonebraker, William J.; and Brashers, Leroy C., Jr. Lifting attachment for lightweight vehicles. 3,804,207, Cl. 187-9.000.

Stonov, Leonid Dmitrievich: *See—*
Volodarskaya, Nadezhda Antonovna; Scheglov, Jury Ventiaminovich; Melnikova, Iraida Alexandrovna; Melnikov, Nikolai Nikolaevich; Baskakov, Jury Alexandrovich; Stonov, Leonid Dmitrievich; Bakumenko, Ljdmila Alexandrovna; Grabovskaya, Asya Mikhailovna; and Kaakova, Alentina Grigorievna, 3,804,611.

Storage Technology Corporation: *See—*

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Stoufer, Wilmer B.: *See—*
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Strawn, Alvin A.: *See—*
Everitt, Scott F.; Croup, Robert F.; and Strawn, Alvin A., 3,804,195.

Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Polyalkenamers and process for the preparation thereof. 3,804,803, Cl. 260-47.0ua.

Streel, Dominique Thomas, to S.A. Cockerill-Ougree-Providence et Esperance Longdoz en Abrege, "Cockerill". Method of coating steel products. 3,804,679, Cl. 148-134.000.

Streel, Dominique Thomas Francois Leon, to Cockerill-Ougree-Providence et Espirance-Longdoz. Device for the application of a metal coating on the internal cylindrical surface of a hollow body. 3,804,059, Cl. 118-49.000.

Street, Thomas T.: *See—*
Leibowitz, Lawrence M.; Balfauf, Richard K.; and Street, Thomas T., 3,805,031.

Strella, Stephen; and Williams, Meurig W., to Xerox Corporation. Electrostatographic pressure sensitive polymeric toner. 3,804,764, Cl. 252-62.100.

Strickland, William R.; Auge, Robert G.; and Brown, James C., to United States of America, Atomic Energy Commission. Method of precipitating americium oxide from a mixture of americium and plutonium metals in a fused salt bath containing PuO_2. 3,804,939, Cl. 423-5.000.

Strobl, Xaver: *See—*
Hoschele, Gunter; Kopp, Eugen; Kroner, Heinz; and Strobl, Xaver, 3,804,570.

Stroman, Jack R.: *See—*
Michaud, Jimmie A.; and Stroman, Jack R., 3,804,270.
Michaud, Jimmie A.; and Stroman, Jack R., 3,805,036.

Stromblad, John; and Johansson, Gunnar, to Allmanna Svenska Elektriska Aktiebolaget. Moulding means. 3,804,362, Cl. 249-78.000.

Strongin, Ned S., to Hasbro Industries, Inc. Toy vehicle and launching device therefor. 3,803,756, Cl. 46-202.000.

Struben, Francis L., to Silver-Top Manufacturing Company, Inc. Skirting for below dwelling with decorative insert strip. 3,803,781, Cl. 52-149.000.

Strupczewski, Joseph T.: *See—*
Glamkowski, Edward J.; Strupczewski, Joseph T.; and Wolf, Erhard H., 3,804,836.

Stubbmann, Albert, to Kohner Bros. Inc. Escapement mechanism. 3,803,735, Cl. 40-28.00r.

Stucchi, Richard F.: *See—*
Arciprete, Cenio R.; Brokaw, Adrian F.; Dumais, Richard E.; and Stucchi, Richard F., 3,804,007.

Stucker, Erwin: *See—*
Wolf, Helmut; Bohm, Wolfgang; and Stucker, Erwin, 3,803,905.

Stuppy Floral, Inc.: *See—*
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Stuppy, Francis X.; and Stephenson, Emmett, to Stuppy Floral, Inc. Attaching assembly for sheet material. 3,803,671, Cl. 24-243.00k.

Sturm, Heribert: *See—*
Schmidhuber, Klaus; Link, Wolfgang; and Sturm, Heribert, 3,804,337.

Su, Chen-Jen, to Continental Can Company, Inc. Haze inhibition in containers fabricated from nitrile polymers. 3,804,938, Cl. 264-232.000.

Subterranean Tools Inc.: *See—*
Goodfellow, Robert D.; and Busby, Donald W., 3,804,425.

Suda, Toshi; and Omori, Norio, to Nippondenso Co., Ltd. Spark ignition internal combustion engine. 3,804,385, Cl. 261-51.000.

Sugahara, Takeshi: *See—*
Soejima, Kazuo; Sugahara, Takeshi; Fukuda, Kazuo; and Hashimura, Kazuya, 3,805,016.

Sugihara, Yasuhiro; and Isobe, Mitsuo, to Matsushita Electric Industriel Co., Ltd. Power supplu circuit. 3,805,088, Cl. 307-150.000.

Sugimoto, Kaname; and Hirao, Mamoru, to Hayashibara Company. Process for preparing sugar containing maltose of high purity. 3,804,715, Cl. 195-31.00r.

Suman, George O., Jr.: *See—*
Closmann, Philip J.; and Suman, George O., Jr., 3,804,172.

Sumitomo Chemical Company, Limited: *See—*
Kishikawa, Hiroshi; Yasuno, Kiyoshi; and Kitamura, Shuji, 3,804,705.
Yanagida, Kiyomi; Tsukiyasu, Tadashi; and Iwata, Seitaro, 3,804,731.

Sumitomo Chemical Company, Ltd.: *See—*
Ooba, Shigehiro; Ozaki, Toshiaki; Yamamoto, Sigeo; and Tanaka, Katsutoshi, 3,804,856.

Summer, Werner: *See—*
Stahle, Helmut; Koppe, Herbert; Summer, Werner; and Hoefke, Wolfgang, 3,804,833.

Summin, Alfred S.; Daun, Henryk; Gilbert, Seymour G.; and Henig, Yair, to Borden, Inc. Packaging tomatoes in carbon dioxide permeable film. 3,804,961, Cl. 426-415.000.

Sun Oil Company: *See—*
Mills, Ivor W.; and Dimeler, Glenn R., 3,804,743.

Sun Oil Company (Delaware): *See—*
Bradley, William S.; and Hardy, William C., 3,804,163.

Sundstrand Corporation: *See—*
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Sunseri, Joe N.: *See—*
Kuneman, William A.; and Sunseri, Joe N., 3,804,064.

Supramar AG: *See—*
Faber, Egon; Jaksch, Ernst; and Stark, Karl-Heinz, 3,804,047.

Sussman, Milton H., to American Optical Corporation. Aperture viewing zoom lens system. 3,804,492, Cl. 350-184.000.

Sussman, Philip S.; and Andrews, Francis W., to Mark-Tex Corporation. Discharge nozzle for ink marking device. 3,804,539, Cl. 401-265.000.

Sutterfield, Douglas: *See—*
Serini, Henry O.; and Sutterfield, Douglas, 3,804,349.

Sutton, John R. Jacking mechanisms. 3,804,369, Cl. 254-105.000.

Sutton, William Heald: *See—*
Evans, Thomas Ernest; and Sutton, William Heald, 3,804,730.

Suyama, Nobuyuki: *See—*
Fujimoto, Kyohei; Suyama, Nobuyuki; Hiroi, Yoshiyasu; Ito, Hideo; Haruki, Hiroshi; Ogawa, Takao; and Kobayashi, Tsutomu, 3,805,269.

Suzuki, Hisao; Musashi, Akira; and Inoue, Tomoyuki, to Nippon Soda Co., Ltd. Thermosetting resin, manufacture and compositions thereof. 3,804,923, Cl. 260-879.000.

Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seidakusho. Electromagnatic switch device. 3,805,200, Cl. 335-201.000.

Suzuki, Minoru, to Showa Musen Kogyo Kabushiki Kaisha. Electron tube socket. 3,805,108, Cl. 313-318.000.

Suzuki, Takeo: *See—*
Nakano, Hirofumi; and Suzuki, Takeo, 3,804,893.

Svendsen, Gordon D., to Ampex Corporation. Motor drive circuit. 3,805,127, Cl. 318-139.000.

Svensson, Erik Torsten Lennart: *See—*
Hogstedt, Klas Ragnar Magnus; Knutsen, Tryggve Lund; Svensson, Erik Torsten Lennart; and Osterman, Sven-Olof, 3,804,964.

Swanson, Colin John, to ISC Alloy Limited of Austral House. Working of alloys. 3,804,677, Cl. 148-11.50r.

Sweet, Samuel G., to Pillsbury Company, The. Apparatus for supplying microwave energy to foods as they are fried. 3,805,009, Cl. 219-10.550.

Swift & Company: *See—*
Clardy, Leroy, 3,804,954.

Swift, Samuel C., to Cities Service Oil Company. Automatic shut-in of down hole well production. 3,804,167, Cl. 166-224.00r.

Sylvania Electric Products Inc.: *See—*
Baker, Donald J.; Gartner, Stanley J.; and Oberg, Robert S., 3,803,697.

Syncro Corporation: *See—*
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Sypniewski, David L.: *See—*
Colucci, Stephen L.; Elliott, Michael T.; Erichsen, Ronald L.; Sypniewski, David L.; and Vopat, Frank E., 3,805,246.

Szymanski, Chester D.; Tessler, Martin M.; and Hill, Harvey, to National Starch and Chemical Corporation. Epichlorohydrin-inhibited, stabilized retort starches. 3,804,828, Cl. 260-233.30r.

Szynka, Peter, to Lohmann & Stollerfoht Aktiengesellschaft. Clutch-coupling assembly. 3,804,220, Cl. 192-85.0ab.

Tada, Hideho: *See—*
Tokushige, Kenichi; Segawa, Toru; Uda, Kiminori; Tada, Hideho; Anodo, Teisuke; Yamamoto, Hiroya; and Hashimoto, Noburo, 3,804,684.

Tagnon, Luc Andre, to Essilor International (Compagnie Generale d'Optique). Device for positioning and holding a lens mounting block mold. 3,804,153, Cl. 164-332.000.

Tajima, Tatsuya: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,804,624.

Takada, Takezo, to Takata Kojyo Co., Ltd. Seat belt responsive engine enabling device. 3,804,192, Cl. 180-82.00c.

Takahashi, Eiki; and Kamata, Yuzuru, to Hitachi, Ltd. Oil-filled AC-DC thyristor convertor. 3,805,140, Cl. 321-8.00r.

Takahashi, Isao: *See—*
Kato, Takashi; Takahashi, Isao; Wakamatsu, Kojiro; and Shimizu, Yashuhiko, 3,804,942.

Takahashi, Kiyoshi: *See—*
Ogiso, Mitsutoshi; Takahashi, Kiyoshi; Furukawa, Hiroshi; and Itani, Takashi, 3,804,497.

Takahashi, Koichi: *See—*
Nakamura, Toshio; Egawa, Hitoshi; Kawai, Sadaharu; and Takahashi, Koichi, 3,804,476.

Takamiya, Tadashi; Kurata, Masaya; Kimura, Tomiaki; Hisamoto, Kazuyoshi; and Ohmura, Yasuhiro, to Alrac Corporation and Mitsubishi Chemical Industries Limited. Continuous process for forming polylactams. 3,804,813, Cl. 260-78.00p.

Takata Kojyo Co., Ltd.: *See—*
Takada, Takezo, 3,804,192.

Takayama, Susumu: *See—*
Shibuya, Akira; Takayama, Susumu; Nitta, Yoshifumi; Sendai, Kazuhiko; and Yana, Masaharu, 3,803,808.

Takeda Chemical Industries, Ltd.: *See—*
Yaoi, Hideaki, 3,804,713.

Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Vehicle drying apparatus. 3,803,727, Cl. 34-229.000.

Takeuchi Tekko Kabushiki Kaisha: *See—*
Takeuchi, Shigeo, 3,803,727.

Takeuchi, Yasuhisa; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Skid control system for motor vehicles. 3,804,469, Cl. 303-21.0be.

Takeyama, Kojiro, to Matsushita Electric Industrial Co. Ltd. Clothes dryer with starter safety switch. 3,803,725, Cl. 34-133.000.

Talamantz, Rudolph. Sortation system. 3,804,248, Cl. 209-125.000.

Tall, Leonard H.; Carlstedt, Paul A.; and Erickson, Arlen J., to CX Processing Laboratories, Inc. Photoelectric article sorter. 3,804,242, Cl. 209-111.600.

Talmo, Robert Eugene, to International Telephone and Telegraph Corporation. Method of making a transducer. 3,803,706, Cl. 29-610.000.

Tamai, Yasuo: *See—*
Sato, Masamichi; Tamai, Yasuo; Fukushima, Osamu; Matsumoto, Seiji; and Horikawa, Kazuo, 3,804,659.

Tanaka, Katsutoshi: *See—*
Ooba, Shigehiro; Ozaki, Toshiaki; Yamamoto, Sigeo; and Tanaka, Katsutoshi, 3,804,856.

Tanaka, Kyoichi, to Toyo Contact Lens Co., Ltd. Protective holder for soft contact lens. 3,804,236, Cl. 206-205.000.

Tanaka, Mitsugu: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,804,624.

Tanaka, Shigeo, to Tokyo Shibaura Electric Co., Ltd. Apparatus for recording and reproducing color video signals. 3,804,974, Cl. 178-5.4cd.

Tansony, John Reginald, to Markland Specialty Engineering, Ltd. Pumping device and a liquid take-off unit including said device. 3,803,919, Cl. 73-421.000.

Tarbox, John W.; Hinds, Walter E.; and Castro, Rodolfo, to Hughes Aircraft Company. Form board for receiving and removably retaining strand material. 3,804,130, Cl. 140-92.100.

Tarjan, Peter F.; Goldstein, Jacob; and Simicich, Esperanto J., to Cordis Corporation. Resuscitation support. 3,804,082, Cl. 128-67.000.

Tatsuguchi, Isamu: *See—*
Gewartowski, James Walter; and Tatsuguchi, Isamu, 3,805,198.

Tauao, Nakazawa: *See—*
Osamu, Samuta; Hirojoshi, Ohno; and Tauao, Nakazawa, 3,805,134.

Tauern, Dankmar; and Harder, Jarl-Max, to Hilti Akteingesellschaft. Capacitor-discharge stud welding apparatus. 3,805,143, Cl. 321-15.000.

Tavernier, Georges Antoine, to Societe Neuvelle Baile Ganghoff Racine Villeurbarne. Device for fitting bottle and container caps. 3,803,800, Cl. 53-264.000.

Taylor, James Lloyd. Amusement and educational device that has a space-age theme. 3,804,414, Cl. 273-113.000.

Taylor, Larry W.: *See—*
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Taylor, Melvin L.: *See—*
Zundel, Weldon P.; Lane, John W.; and Taylor, Melvin L., 3,804,613.

Taylor, Roger W.: *See—*
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Taylor-Wilson Manufacturing Company: *See—*
McConnell, William M.; Bradley, William H.; Chappell, Howard E.; and Carey, Raymond L., 3,803,901.

Tazuki, Satoru, to Tokyo Shibaura Electric Company, Ltd. Molded case curcuit breaker. 3,805,199, Cl. 335-191.000.

Tec Group, Inc., The: *See—*
Hickey, William E., Jr., 3,804,553.

Techni-Tool, Inc.: *See—*
Halstead, William M., 3,804,667.

Technicon Instruments Corporation: *See—*
Smythe, William J.; and Shamos, Morris H., 3,804,593.

Tegholm, Ruben Valdemar, to Atlas Copco Aktiebolag. Device for investigating properties of rock to establish the presence of loose blocks adjacent to the surface thereof. 3,804,205, Cl. 181-.5np.

Teledyne Mid-American Corporation: *See—*
Church, Herman S.; and Hagener, James L., 3,804,445.

Teleonic Industries, Inc.: *See—*
Keranen, Robert M., 3,805,209.

Telex Corporation, The: *See—*
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Teltronics, Inc.: *See—*
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Tenchio, Georges: *See—*
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Terdina, John W.: *See—*
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Terra, Larl Romanovich: *See—*
Ryabinin, Vladimir Alexandrovich; Sadofiev, Vladimir Ivanovich; Milin, Igor Mikhailovich; Yankevich, Kira Boleslavovna; Matrosov, Evgeny Ivanovich; Leliovsky, Anton Flixovich; Terra, Larl Romanovich; and Kashirin, Alexei Petrovich, 3,805,111.

Terra Marine Scoop Company, Inc.: *See—*
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Tersch, Richard W.: *See—*
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Tessler, Martin M.: *See—*
Szymanski, Chester D.; Tessler, Martin M.; and Hill, Harvey, 3,804,828.

Teves, Alfred, GmbH: *See—*
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Texaco Inc.: *See—*
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Nelson, Gerald V.; and Wray, Glenn C., 3,804,748.
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Texas Industries, Inc.: *See—*
Cox, Edgar R., 3,804,300.

Texas Instruments Incorporated: *See—*
Brown, Frederick W., 3,804,982.
Dubuc, Rene A.; White, Sheldon S.; and Willoughby, Joseph A., 3,803,711.
Kulwicki, Bernard M.; and Trenkler, George, 3,805,022.
McCormack, Kent, 3,805,074.

Textron, Inc.: *See—*
De Caro, Charles J., 3,804,142.
Louw, Johan August; and Ghiselin, Robert Earle, 3,804,318.
Schmidt, Erich A.; and Schmidt, Volker B., 3,803,698.

Textron, Incorporated: *See—*
Covington, Cecil E., 3,804,552.

Thedovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Thedovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,804,150.

Thermo Electron Corporation: *See—*
Searight, Edward F.; and Brosens, Pierre J., 3,804,159.

Thiel, Max: *See—*
Wied mann, Fritz; Thiel, Max; Stach, Kurt; Roesch, Egon; and Hardebeck, Klaus, 3,804,835.

Thiene, Carl G.; deceased (by Thiene, Carol M.; executrix); and Smith, Henry, to Reynolds Printasign Company. Card printing machine. 3,804,014, Cl. 101-269.000.

Thiene, Carol M.: *See—*
Thiene, Carl G.; and Smith, Henry, 3,804,014.

Thiery, Jean: *See—*
Chatard, Michel; Grolet, Pierre; Reynard, Remi; and Thiery, Jean, 3,804,111.

Thom, Wenzel W., to Architectural Art Mfg., Inc. Twin post railing system. 3,804,374, Cl. 256-59.000.

Thoma, Otto: *See—*
Mentrup, Anton; Schromm, Kurt; Thoma, Otto; and Zeile, Karl, 3,804,834.

Thomas & Betts Corporation: *See—*
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Thomas, Brantley D., Jr.: *See—*
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Thomas, David Kenneth: *See—*
Day, John; and Thomas, David Kenneth, 3,804,801.

Thompson, Harold. Wildlife call. 3,803,755, Cl. 46-180.000.

Thompson, Herbert E., to Memorex Corporation. Recording head flexure. 3,805,290, Cl. 360-103.000.

Thompson, John R.: *See—*
Penrose, Richard T.; and Thompson, John R., 3,804,709.

Thompson, William Henry, to Fitzwilton Limited. Production of fertilisers. 3,803,884, Cl. 71-34.000.

Thomson, Ely Knox, to Continental Carbon Company. Automatic unloading spout. 3,804,136, Cl. 141-284.000.

Thomson, Ronald E.: *See—*
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Thomson-CSF: *See—*
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Thorngate, John H.: *See—*
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Thornton, Duane V.: *See—*
O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., 3,804,028.

Thornton, J. Scott: *See—*
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Tichy, Nick: *See—*
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Tilgner, Hans Georg: *See—*
Schmid, Karl; Schauerte, Karlheinz; Kirchhof, Hans Werner; Gelbe, Horst; Tilgner, Hans Georg; and Wenderoth, Richard, 3,804,915.

Tilley, Brian Paterson: *See—*
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Tillman, Harry L., to Whirlpool Corporation. Refrigerator cabinet structure. 3,804,481, Cl. 312-214.000.

Time Computer, Inc., mesne: *See—*
Reese, Robert O., 3,803,834.
Roberts, Dennis A., 3,803,827.

Timex Corporation: *See—*
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Timofeev, Nikolai Ivanovich: *See—*
Goltsov, Viktor Alexeevich; Geld, Pavel Vladimirovich; Kagan, Genrikh Efimovich; Timofeev, Nikolai Ivanovich; Filippovichbelyaev, Ivan; Mitjushov, Viktor Alexandrovich; and Kurumchina, Saule Khuryatbekovna, 3,804,616.

Tincher, Cline A., to Monsanto Company. N,N'-bisubstituted sulfamides. 3,804,896, Cl. 260-556.00n.

Tischer, Richard E.: *See—*
Elmer, Thomas H.; and Tischer, Richard E., 3,804,647.

Tischinger, Edward A., to MPL, Inc. Method of assembling a glass tube and thermoplastic resin finger grip sleeve assembly. 3,803,700, Cl. 29-400.000.

Tite, John: *See—*
Holmes, Frank Robert Edwin; and Tite, John, 3,804,131.

Toczycki, Jan, to Illinois Tool Works Inc. Power driver device. 3,803,840, Cl. 60-371.000.

Toderbaun, Nita: *See—*
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Tokovenko, Stepan Emelyanovich: *See—*
Borisov, Kostantin Grigonievich; Kuzemko, Vitaly Stepanovich; Sitnikov, Leonid Semenovich; Tokovenko, Stepan Emelyanovich; and Utyakov, Lev Lazarevich, 3,805,029.

Tokushige, Kenichi; Segawa, Toru; Uda, Kiminori; Tada, Hideho; Anodo, Teisuke; Yamamoto, Hiroya; and Hashimoto, Noburo, to Showa Denko K.K. Process for manufacturing a composite foamed synthetic resin extrudate having an outer hard surface layer and at leat one hard interlayer. 3,804,684, Cl. 156-60.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Tanaka, Shigeo, 3,804,974.
Watanabe, Sadakazu, 3,805,239.

Tokyo Shibaura Electric Company, Ltd.: *See—*
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Tomasik, Georges: *See—*
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Tombs, Terence Leslie, to Lucas, Joseph, (Industries) Limited. Method of manufacturing ceramic magnets conaining strontium or barium ferrite. 3,804,767, Cl. 252-62.630.

Tomlinson, Kenneth: *See—*
Harrison, Michael; and Tomlinson, Kenneth, 3,804,946.

Tooka, Takuzo, to Kabushiki Kaisha Toyoda Jiboshokki Seisakusho. Computer process-control system for carrying out spinning preperation. 3,805,244, Cl. 340-172.500.

Torbeti, Richard L.: *See—*
Lehe, Russell B.; and Torbeti, Richard L., 3,804,067.

Torii, Osamu; Torii, Sugako; and Hashimoto, Yasuyuki, to Ancos Co., Ltd. and Skater Fountain Pen Co., Ltd., The. Slide type mechanical pencil. 3,804,536, Cl. 401-58.000.

Torii, Sugako: *See—*
Torii, Osamu; Torii, Sugako; and Hashimoto, Yasuyuki, 3,804,536.

Toscan, Richard E. Sailboat racing calculator. 3,804,057, Cl. 116-133.000.

Totino, Peter J., to McGraw-Edison Company. Endless loop tape-recording having single capstan bi-directional drive and tape run above recording station. 3,805,287, Cl. 360-62.000.

Toupin, Richard A.: *See—*
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Towmotor Corporation: *See—*
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Townsend, Nicholas Arthur: *See—*
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Tozawa, Katsutoshi: *See—*
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Tracer, Jay. Apparatus for determining heat-transfer rates and thus the flow rates or thermal conductivities of fluids. 3,803,913, Cl. 73-204.000.

Trahan, Albert J. Adjustable ball bearing assembly for dynamic balancing machines. 3,803,922, Cl. 73-471.000.

Traunecker, Werner: *See—*
Losel, Walter; Merz, Herbert; Hoefke, Wolfgang; and Traunecker, Werner, 3,804,825.

Treanor, Eugene Joseph, to Makap Limited. Closures for containers. 3,804,301, Cl. 222-153.000.

Treilhard, Donald G. J., to Cities Service Company. Elimination of side wall erosion in electric furnaces. 3,804,969, Cl. 13-35.000.

Trenkler, George: *See—*
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Tribuno, Robert: *See—*
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Triplett, Arthur L., to Driver's Dream, Inc. Windshield cleaner dispenser. 3,803,664, Cl. 15-250.030.

Tripp, Donald E.: *See—*
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Trivedi, Mayukh Trigunshankar, to Western Electric Company, Incorporated. Method of bonding using an infrared heating lamp. 3,804,691, Cl. 156-272.000.

Trostad, per Olof, to Seasafe Transport AB. Planing watercraft. 3,803,653, Cl. 9-310.00c.

Troutman, James D.: *See—*
Haines, David E.; and Troutman, James D., 3,803,739.

Trulsson, Nils Olof; and Lagos, Dickens Mario, to Standard Paint & Varnish Company. Coating composition having polymeric siloxane binder and dispersed filler. 3,804,639, Cl. 106-1.000.

Truswell, Laurence Derrick: *See—*
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Tsuda, Shin; and Hiraga, Ryozo, to Canon Kabushiki Kaisha. Electronic circuit test equipment indicating a plurality of conditions by a plurality of different frequency audible signals. 3,805,155, Cl. 324-133.000.

Tsukiyasu, Tadashi: *See—*
Yanagida, Kiyomi; Tsukiyasu, Tadashi; and Iwata, Seitaro, 3,804,731.

Tsumura, Katsuhiko, to Kabushiki Kaisha Machida Seisakusho. Light source apparatus for endoscope. 3,805,112, Cl. 315-160.000.

Tsuruishi, Yuki; Naito, Okito; and Matsuzawa, Masanao, to Kabushiki Kaisha Suwa Seikosho. Coil structure for electric watches. 3,803,829, Cl. 58-28.00a.

Tucci, John James, to AMP Incorporated. Apparatus for installing a electrical connector on conductors intermediate the ends thereof. 3,803,695, Cl. 29-203.00h.

Tuma, William S.: *See—*
Apicella, Anthony M.; and Tuma, William S., 3,804,686.

Tunc, Deger, to Johnson & Johnson. Water dispersible nonwoven fabric. 3,804,092, Cl. 128-284.000.

Tunzi, Joseph P.; and Sisko, Clifford A., to Admiral Corporation. Ice cube ejector device. 3,803,868, Cl. 62-320.000.

Tunzini Entreprise: *See—*
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Tup (Panama) S.A.: *See—*
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Tupper, Earl Silas, to Tup (Panama) S.A. Facial wear. 3,804,083, Cl. 128-76.00b.

Turnbull, William C.: *See—*
Turnbull, William C.; and Hasselbach, William H., 3,803,791.

Turnbull, William C.; and Hasselbach, William H., to Turnbull, William C. Device for and method of mounting wall facings. 3,803,791, Cl. 52-506.000.

Turner, Kenneth Lamar: *See—*
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Turuga, Tomio. Diaghragm support. 3,804,994, Cl. 179-115.50r.

Tuthill Pump Company: *See—*
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Twin Disc, Incorporated: *See—*
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Twort, Thomas James, to Urguhart Engineering Company Limited and Bloom Engineering Co., Inc. Precast furnace pipe insulation. 3,804,585, Cl. 432-234.000.

Tyco Laboratories, Inc.: *See—*
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Tymshare, Inc.: *See—*
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Ueda, Takeo. System for detecting an object. 3,805,263, Cl. 343-5.0pd.
Uehara, Hiromichi; and Ijuin, Yasuharu, to Sagami Chemical Research Center. Method for measuring nitrogen oxides in pollution air and device for performing the same method. 3,805,148, Cl. 324-.50r.
Uffner, Melville W., to Air Products and Chemicals, Inc. Metal-amine complex accelerator for polyester resin curing. 3,804,799, Cl. 260-40.00r.
Ugine Kuhlmann: *See—*
Mingasson, George Raymond Henry; and Domergue, Annick Marthe Suzanne Simone, 3,804,837.
Mingasson, Georges Raymond Henry; and Domergue, Annick Marthe Suzanne Simone, 3,804,838.
Uhl, George A., to Atlantic Richfield Company. Catalyst distribution apparatus. 3,804,273, Cl. 214-17.0cb.
Ulin, Carl-Otto. Device in a type printer. 3,804,225, Cl. 197-49.000.
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National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Cable, Walter L.; and Dougherty, Harold B. Rotary solenoid shutter drive assembly and rotary inertia damper and stop plate assembly. 3,804,506, Cl. 354-234.000.
Munson, Robert E. Turnstile slot antenna. 3,805,266, Cl. 343-708.000.
National Aeronautics and Space Administration, mesne: *See—*
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Upmeier, Hartmut, to Windmoller & Holscher. Apparatus for making, flattening and hauling off blown tubular plastics film. 3,804,571, Cl. 425-326.000.
Upmeier, Hartmut, to Windmoller & Holscher. Apparatus for making tubular plastics film by means of a blowhead. 3,804,572, Cl. 425-326.00r.
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Uyehara, Henry K. Body mounted surfboard. 3,803,652, Cl. 9-310.00e.

Vac-U-Max: *See—*
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Valantin, Alfred, to Charbonnages de France. Friction coupling with fluid operated diaphragm. 3,804,221, Cl. 192-88.00b.

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Vallorbs Jewel Company: *See—*
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Van Allen, Larry, to Honeywell Information Systems, Inc. Encoder/decoder for code words of variable length. 3,805,232, Cl. 340-146.1a1.

Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, to Respiratory Care, Inc. Multi-use inhalation therapy apparatus. 3,804,280, Cl. 215-1.00c.

van de Griend, Jan Maarten, to U.S. Philips Corporation. Commutator for a small electrodynamic machine. 3,805,103, Cl. 310-232.000.

van Diepenbroek, Alfred Erich Wibrandt, to Bronswerk-Apparatenbau N.V. v/h Moring & Steenaart. Apparatus for introducing a mist of water into a gas. 3,804,383, Cl. 261-30.000.

Van Exel, Garrit A.; and Akin, Alfred A., Jr., to Bausch & Lamb, Incorporated. Adapter stand for converting a binocular to a microscope. 3,804,486, Cl. 350-18.000.

Van Gulick, John A., to Consolidated Foods Corporation, mesne. Water purifier. 3,804,254, Cl. 210-96.000.

Van Raden, Earl M., to Mahon Industrial Corporation. Particle collecting device. 3,803,997, Cl. 98-115.0sb.

Van Wyk, Rogell: *See—*
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Vandermark, Harold F., to Nu-Concept Computer Systems, Inc. Pack extractor. 3,804,320, Cl. 228-19.000.

Vanni, Robert R. Toy helicopter or the like. 3,803,752, Cl. 46-75.000.

Van't Hof, Gustaaf. Boom arrangement for confining oil. 3,803,848, Cl. 61-1.00f.

Vapa AG: *See—*
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Varnum, William Robert, to Burning, J. & J., Inc. Storage bin system. 3,804,269, Cl. 214-16.00r.

Vaughan, Raymond C., to Carborundum Company, The. Furnace for fiber production. 3,804,582, Cl. 432-211.000.

VDO Tachometer Werke Adolf Schindling GmbH: *See—*
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Velichko, Kaleria Petrovna: *See—*
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Vellinga, Meindert B.; Hartog, Frits; and Von den Hoff, Johan P. H., to Stamicarbon N.V. Process for the preparation of ethylidene norbornenes. 3,804,912, Cl. 260-666.0py.

Velsicol Chemical Corporation: *See—*
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Venable, Douglas; Taylor, Roger W.; and Rogers, Benjamin T., to United States of America, Atomic Energy Commission. Method for mitigating blast and shock transmission within a confined volume. 3,804,017, Cl. 102-23.000.

Ventron Corporation: *See—*
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Visioli, Armando Joseph, Jr.; and Wittlinger, Harold Allen, to RCA Corporation. Gated astable multivibrator. 3,805,184, Cl. 331-65.000.

Visser, Hinderikus Lucas. Automatic pistol. 3,803,976, Cl. 89-129.00b.

Vockler, Ulrich, to Licentia Patent-Verwaltungs-GmbH. Fastening arrangement for motor stator support. 3,805,102, Cl. 310-91.000.

Voegeli, Henry Carl. Coin operated latch control mechanism. 3,804,223, Cl. 194-71.000.

Vogel, Xaver, to Brown Boveri & Company Limited. Semiconductor disc assembly providing predetermined compressive force against opposite faces of the disc by clamped heat-condrictive badus. 3,805,122, Cl. 317-234.00r.

Vogt, Thomas E., to Owens-Illinois, Inc. Apparatus for stopping the flow of sheets of material. 3,804,403, Cl. 271-182.000.

Voida, George, to United States of America, Atomic Energy Commission. Battery cable assembly. 3,805,218, Cl. 339-148.000.

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Vom Stein, Hans, to Vom Stein, Hans OHG. Roller for conveyor systems. 3,803,682, Cl. 29-116.00r.

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Weihrauch, Georg, to Coronet-Werke Heinrich Schlerf GmbH. Brush having adjustable hardness. 3,803,663, Cl. 15-169.000.

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Welch, Cletus N., to Nora International Company. Electrodes having a delafossite surface. 3,804,740, Cl. 204-290.00r.

Welch, Hugo Clayton, to McNeil Corporation. Air boom crop sprayer. 3,804,332, Cl. 239-77.000.

Wellman, Russell W.; Harrell, Sidney L.; and Young, Don H., to Waterguard Systems, Inc. System for automatically maintaining chlorine concentration and Ph of swimming pool water at predetermined levels. 3,804,253, Cl. 210-85.000.

Wells, John B., to Xerox Corporation. Method of producing planographic plates by photoelectrophoretic imaging. 3,804,620, Cl. 96-1.300.

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Wheeler, Raymond Ralph. Carrier for wire garment hangers. 3,804,310, Cl. 224-45.00t.

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Wolf, John H. Ground level service rack for pole-mounted fixtures. 3,805,054, Cl. 240-70.000.

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Appel, Arthur, and A. J. Stein, to International Business Machines Corp. Process for enabling the interpretation of views of polyhedra. T921,020, 4–16–74, Cl. 340—172.5.

Barry, Robert F. Core for a nuclear reactor. T921,019, 4–16–74. Cl. 176—18.

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Casey, Richard G., to International Business Machines Corp. Integer programming method for geographically distributing identical resources. T921,022, 4–16–74, Cl. 444—1.

Colburn, Richard P., to Westinghouse Electric Corp. Method for removing fission products from a nuclear reactor coolant. T921,014, 4–16–74, Cl. 176—37.

Cooper, Martin H., to Westinghouse Electric Corp. Removal of radioactive contamination from a nuclear reactor coolant. T921,016, 4–16–74, Cl. 176—37.

Dooner, Nitta P., J. Lourie, and L. S. Woo, to International Business Machines Corp. Processing of data for multicolor or other multisymbol designs. T921,021, 4–16–74, Cl. 444—1.

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577R 3,803,942
612 3,803,943
665F 3,803,944
675 3,803,945
745 3,803,946
750B 3,803,947
763 3,803,948
815 3,803,949

CLASS 75
101R 3,804,613
103 3,804,614
129 3,804,615
172G 3,804,616
208R 3,804,617

CLASS 76
101A 3,803,950
107R 3,803,951

CLASS 81
52.4R 3,803,952
53A 3,803,953
126 3,803,954

CLASS 82
2.5 3,803,955
19 3,803,956
3,803,957

CLASS 83
15 3,803,958
18 3,803,959
56 3,803,960
71 3,803,961
110 3,803,962
116 3,803,963
154 3,803,964
155 3,803,965
294 3,803,966
371 3,803,967
620 3,803,968
627 3,803,969

CLASS 84
1.03 3,803,970
4R4 3,803,971

CLASS 85
1JP 3,803,972
80 3,803,973

CLASS 89
1.5E 3,803,974
7 3,803,975
129B 3,803,976

CLASS 90
1.6 3,803,977
11R 3,803,978
13.3 3,803,979
14 3,803,980
15B 3,803,981
31 3,803,982

CLASS 91
227 3,803,983
487 3,803,984
488 3,803,985
492 3,803,986
506 3,803,987

CLASS 92
85 3,803,988

CLASS 93
28 3,803,989
35H 3,803,990
35R 3,803,991
36.9 3,803,992
38 3,803,993

CLASS 95
4.5R Re.27,974

CLASS 96
1R 3,804,618
1.2 3,804,619
1.3 3,804,620
36 3,804,621
36.3 3,804,636
38 3,804,622
47 3,804,623
66R 3,804,624
67 3,804,625
76C 3,804,626
3,804,627
90PC 3,804,628
94R 3,804,629
99 3,804,630
108 3,804,632
109 3,804,633
115P 3,804,631
125 3,804,634

CLASS 98
2.12 3,803,994
36 3,803,995
115SB 3,803,997
115R 3,803,996

CLASS 99
283 3,804,635
310 3,803,998
362 3,803,999
450.1 3,804,637
533 3,804,000

CLASS 100
4 3,804,001
53 3,804,002
3,804,003
98 3,804,004

CLASS 101
2 3,804,005
5 3,804,006
66 3,804,007
93C 3,804,008
3,804,009
119 3,804,010
120 3,804,011
122 3,804,012
250 3,804,013
269 3,804,014
297 3,804,015
333 3,804,016

CLASS 102
23 3,804,017
28M 3,804,018
42R 3,804,019
70R 3,804,021
81 3,804,020

CLASS 104

148MS	3,804,022
	3,804,024
148SS	3,804,023

CLASS 105

215C	3,804,025
369BA	3,804,027
369A	3,804,028
376	3,804,029
377	3,804,026

CLASS 106

1	3,804,638
	3,804,639
27	3,804,640
38.2	3,804,641
38.27	3,804,642
38.35	3,804,643
45	3,804,644
50	3,804,645
52	3,804,646
54	3,804,647
56	3,804,648
57	3,804,649
84	3,804,650
85	3,804,651
118	3,804,652
124	3,804,653
134	3,804,654
300	3,804,655
308Q	3,804,656

CLASS 108

43	3,804,030
44	3,804,031
51	3,804,032
55	3,804,033

CLASS 109

80	3,804,034

CLASS 110

8A	3,804,035

CLASS 111

1	3,804,036

CLASS 112

9	3,804,037
67	3,804,038
105	3,804,039
121.15	3,804,040
158A	3,804,041
181	3,804,042
219A	3,804,043
220	3,804,044

CLASS 113

120H	3,804,045

CLASS 114

50	3,804,046
66.5H	3,804,047
	3,804,048
67A	3,804,049
74A	3,804,050
210	3,804,051
235R	3,804,052

CLASS 116

13	3,804,053
106	3,804,054
124R	3,804,055
125	3,804,056
133	3,804,057

CLASS 117

11	3,804,657
37LE	3,804,658
	3,804,659
	3,804,660
62.2	3,804,661
71R	3,804,662
101	3,804,663
106C	3,804,664
107.2P	3,804,665
125	3,804,666
201	3,804,668
212	3,804,667
218	3,804,669

CLASS 118

49	3,804,059
64	3,804,060
325	3,804,061
637	3,804,062

CLASS 119

3	3,804,063
5	3,804,064
11	3,804,065
23	3,804,066
28	3,804,067
81	3,804,068
131	3,803,753

CLASS 122

34	3,804,069
406S	3,804,070

CLASS 124

16	3,804,071
24R	3,804,072

CLASS 126

112	3,804,073
125	3,804,074
258	3,804,075
261	3,804,076
263	3,804,077
271.2C	3,804,078
343.5A	3,804,079

CLASS 127

5	3,804,670

CLASS 128

2.06E	3,804,080
6	3,804,081
67	3,804,082
76B	3,804,083
80C	3,804,084
85	3,804,085
146.2	3,804,086
163	3,804,087
260	3,804,088
276	3,804,089
	3,804,090
283	3,804,091
284	3,804,092
286	3,804,093
290R	3,804,094
303.1	3,804,095
303.14	3,804,096
350R	3,804,097
404	3,804,098
583	3,804,099

CLASS 131

173	3,804,100
243	3,804,101

CLASS 132

92A	3,804,102

CLASS 134

48	3,804,103
72	3,804,104

CLASS 135

25R	3,804,105

CLASS 136

6LN	3,804,671
20	3,804,672
100M	3,804,673
120FC	3,804,674
137	3,804,675
205	3,804,676

CLASS 137

66	3,804,106
101.31	3,804,107
112	3,804,108
119	3,804,109
268	3,804,110
355.16	3,804,111
489	3,804,112
496	3,804,113
515.5	3,804,114
525	3,804,115
596	3,804,116
606	3,804,117
608	3,804,118
625.32	3,804,119
625.64	3,804,120
625.65	3,804,121
625.66	3,804,122
625.69	3,804,123
630.14	3,804,124

CLASS 138

30	3,804,125
89	3,804,126

CLASS 139

34	3,804,127
66R	3,804,128
370	3,804,129

CLASS 140

92.1	3,804,130
92.2	3,804,131
106	3,804,132

CLASS 141

6	3,804,133
98	3,804,134
266	3,804,135
284	3,804,136

CLASS 144

3D	3,804,137
34F	3,804,138

CLASS 148

11.5R	3,804,677
38	3,804,678
134	3,804,679
162	3,804,680
188	3,804,681
189	3,804,682

CLASS 149

19.5	3,804,683

CLASS 150

.5	3,804,139

CLASS 151

52	3,804,140

CLASS 152

208	3,804,141
210	3,804,142
225	3,804,143
313	3,804,144

CLASS 156

60	3,804,684
98	3,804,685
155	3,804,686
161	3,804,687
175	Re.27,973
205	3,804,688
233	3,804,689
242	3,804,690
272	3,804,691
300	3,804,692
330	3,804,693
441	3,804,695
477B	3,804,694
499	3,804,696
582	3,804,697

CLASS 159

4RR	3,804,145

CLASS 161

7	3,804,698
39	3,804,699
160	3,804,700
165	3,804,701
168	3,804,702
196	3,804,703
206	3,804,704
253	3,804,705

CLASS 162

109	3,804,706
358	3,804,707

CLASS 164

4	3,804,146
49	3,804,147
252	3,804,148
	3,804,149
	3,804,150
263	3,804,151
306	3,804,152
332	3,804,153

CLASS 165

1	3,804,154
	3,804,155
27	3,804,156
55	3,804,157
61	3,804,158
109	3,804,159
145	3,804,160
158	3,804,161
164	3,804,162

CLASS 166

59	3,804,163
120	3,804,164
206	3,804,165
216	3,804,166
224R	3,804,167
250	3,804,168
267	3,804,169
270	3,804,170
	3,804,171
272	3,804,172
275	3,804,173
292	3,804,058
293	3,804,174

CLASS 169

46	3,804,175

CLASS 171

101	3,804,176

CLASS 172

26.5	3,804,177
67	3,804,178
510	3,804,179

CLASS 173

15	3,804,180
17	3,804,181

CLASS 174

16B	3,804,970
88C	3,804,972
88R	3,804,971
208	3,804,973

CLASS 175

1	3,804,182
5	3,804,183
226	3,804,184
297	3,804,185
317	3,804,186
409	3,804,187

CLASS 176

68	3,804,708
	3,804,709
79	3,804,710
84	3,804,711
87	3,804,712

CLASS 177

25	3,804,188

CLASS 178

5.4CD	3,804,974
6	3,804,975
6.8	3,804,976
	3,804,977
	3,804,978
7.1	3,804,979
	3,804,980
7.3R	3,804,981
69.5R	3,804,982
	3,804,992
87	3,804,983

CLASS 179

6.3R	3,804,984
15AS	3,804,990
15AT	3,804,989
15BS	3,804,985
15FS	3,804,988
15A	3,804,986
	3,804,987
26	3,804,991
100.1PS	3,804,993
115.5R	3,804,994
170A	3,804,995

CLASS 180

24.02	3,804,189
44F	3,804,190
49	3,804,191
82C	3,804,192
105E	3,804,193
116	3,804,197

CLASS 181

.5NP	3,804,205
.5H	3,804,194
31B	3,804,195
33G	3,804,196

CLASS 182

21	3,804,198
82	3,804,199
91	3,804,200

CLASS 184

6.1	3,804,201
6.16	3,804,202
64	3,804,203

CLASS 185

39	3,804,204

CLASS 187

8.52	3,804,206
9	3,804,207
19	3,804,208
29R	3,804,209

CLASS 188

1B	3,804,210
5	3,804,211
72.4	3,804,212
73.2	3,804,213
73.4	3,804,215
107	3,804,214
314	3,804,216
322	3,804,217

CLASS 191

1	3,804,996
48	3,804,997

CLASS 192

53E	3,804,218
82T	3,804,219
85AB	3,804,220
88B	3,804,221
103B	3,804,222

CLASS 194

71	3,804,223

CLASS 195

1.3	3,804,713
28R	3,804,714
31R	3,804,715
	3,804,716
65	3,804,717
66R	3,804,718
68	3,804,719
103.5R	3,804,720

CLASS 197

1R	3,804,224
49	3,804,225
133R	3,804,226
151	3,804,227

CLASS 198

31AB	3,804,228
36	3,804,229
127R	3,804,230
174	3,804,231
195	3,804,232

CLASS 200

50AA	3,804,998
61.34	Re.27,971
80R	3,804,999
144B	3,805,000
148BV	3,805,001
150R	3,805,002
157	3,805,003
284	3,805,005
290	3,805,006
311	3,805,004
314	3,805,007
332	3,805,008

CLASS 202

256	3,804,721

CLASS 203

14	3,804,722
92	3,804,723

CLASS 204

12	3,804,724
26	3,804,725
43T	3,804,726
49	3,804,727
51	3,804,728
52R	3,804,729
56R	3,804,730
58	3,804,731
	3,804,732
151	3,804,733
157.1H	3,804,734
159.22	3,804,735
159.23	3,804,736
181	3,804,737
192	3,804,738
266	3,804,739
290R	3,804,740

CLASS 206

19.5R	3,804,233
205	3,804,236
392	3,804,234
451	3,804,237
459	3,804,238
497	3,804,235
503	3,804,239

CLASS 208

19	3,804,743
24	3,804,744
80	3,804,745
110	3,804,741
111	3,804,742
	3,804,746
120	3,804,747
211	3,804,748
241	3,804,749
253	3,804,750
370	3,804,752

CLASS 209

73	3,804,240
110.5	3,804,241
111.6	3,804,242
125	3,804,248
166	3,804,243
211	3,804,244
240	3,804,245
264	3,804,246
273	3,804,247
473	3,804,249
475	3,804,250

CLASS 210

21	3,804,753
23	3,804,754
50	3,804,751
	3,804,755
59	3,804,756
	3,804,757
65	3,804,758
83	3,804,251
84	3,804,252
85	3,804,253
96	3,804,254
194	3,804,255
222	3,804,256
335	3,804,257
460	3,804,258
490	3,804,259
513	3,804,260
519	3,804,261

CLASS 212

55	3,804,262
65	3,804,263
144	3,804,264

CLASS 214

1.3	3,804,265
6DK	3,804,266
8.5K	3,804,267
14	3,804,268
16B	3,804,270
16R	3,804,269
16.4R	3,804,271
	3,804,272
17CB	3,804,273
38CA	3,804,274
152	3,804,275
	3,804,276
302	3,804,277
509	3,804,278
519	3,804,279

CLASS 215

1C	3,804,280
13R	3,804,281
32	3,804,282
262	3,804,283
272	3,804,284
337	3,804,285

CLASS 219

10.55	3,805,009
10.77	3,805,010
60A	3,805,011
69S	3,805,012
92	3,805,013
	3,805,014
121L	3,805,015
146	3,805,016
213	3,805,017
349	3,805,019
387	3,805,018
469	3,805,020
482	3,805,021
505	3,805,022
543	3,805,023
553	3,805,024

CLASS 220

27	3,804,286
	3,804,287
46R	3,804,288
60R	3,804,289
72	3,804,290
85R	3,804,291
88B	3,804,292

CLASS 221

102	3,804,293
154	3,804,294

CLASS 222

20	3,804,295
48	3,804,296
54	3,804,297
56	3,804,298
61	3,804,299
67	3,804,300
153	3,804,301
182	3,804,302
193	3,804,303
271	3,804,304
538	3,804,305

CLASS 224

2B	3,804,306
28C	3,804,307
42.06	3,804,308
45BA	3,804,309
45T	3,804,310
49	3,804,311

CLASS 226

35	3,804,312
49	3,804,313

CLASS 227

10	3,804,314
	3,804,315
40	3,804,316
155	3,804,317

CLASS 228

2	3,804,318
6	3,804,319
19	3,804,320

CLASS 229

38	3,804,321
53	3,804,322
	3,804,323

CLASS 233

24	3,804,324

CLASS 234

41	3,804,325

CLASS 235

61.11E	3,805,027
61.12R	3,805,026
61.6H	3,805,025
92EA	3,805,029
	3,805,031
92GA	3,805,030
92PC	3,805,028
150.1	3,805,032
150.22	3,805,033
150.24	3,805,034
151.12	3,805,044
151.3	3,805,035
151.32	3,805,036
152	3,805,037
153AE	3,805,039
153AK	3,805,038
153AP	3,805,040
155	3,805,041
156	3,805,042
164	3,805,043
175	3,805,045
197	3,805,046

CLASS 236

92	3,804,326

CLASS 238

18	3,804,327

CLASS 239

2R	3,804,328
4	3,804,329
34	3,804,330
59	3,804,331
77	3,804,332
124	3,804,333

276 3,804,334
289 3,804,335
383 3,804,336
513 3,804,337
541 3,804,338

CLASS 240

6.4W 3,805,047
8.16 3,805,048
10F 3,805,050
10R 3,805,049
41.35A 3,805,051
41.35C 3,805,052
51.11R 3,805,053
70 3,805,054
84 3,805,055
3,805,055

CLASS 241

17 3,804,339
28 3,804,340
32.5 3,804,341
37 3,804,342
37.5 3,804,343
65 3,804,344
182 3,804,346
207 Re.27,970
264 3,804,345

CLASS 242

7.09 3,804,347
67.1R 3,804,348
84.5A 3,804,349
157.1 3,804,350
199 3,804,351
201 3,804,352

CLASS 244

57 3,804,353

CLASS 246

187B 3,805,056

CLASS 248

68R 3,804,354
125 3,804,355
179 3,804,356
203 3,804,357
205R 3,804,358
3,804,359
489 3,804,360

CLASS 249

78 3,804,361
3,804,362
100 3,804,363

CLASS 250

203CT 3,805,058
206 3,805,059
3,805,060
209 3,805,061
211J 3,805,062
212 3,805,063
221 3,805,064
226 3,805,065
227 3,805,066
297 3,805,057
303 3,805,067
305 3,805,068
326 3,805,069
328 3,805,070
3,805,071
342 3,805,072
353 3,805,073
355 3,805,074
365 3,805,076
366 3,805,075
372 3,805,077
390 3,805,078
392 3,805,079
439 3,805,080
512 3,805,081

CLASS 251

43 3,804,364
144 3,804,365
235 3,804,367
305 3,804,366

CLASS 252

8 3,804,759
8.55R 3,804,760
25 3,804,761
50 3,804,762
51.5A 3,804,763
62.1 3,804,764
62.57 3,804,766
62.63 3,804,767
62.9 3,804,765
79.4 3,804,768
171 3,804,769
180 3,804,770
188.3 3,804,771
301.1R 3,804,772
301.2R 3,804,774
301.2W 3,804,773
316 3,804,775
3,804,776
413 3,804,777
441 3,804,778
447 3,804,779
455Z 3,804,780
463 3,804,781

CLASS 254

51 3,804,368
105 3,804,369
150R 3,804,370
186R 3,804,371
190 3,804,372
3,804,373
234 3,804,506

CLASS 256

59 3,804,374

CLASS 259

1R 3,804,375
4 3,804,376
6 3,804,377
7 3,804,378
81R 3,804,379
157 3,804,380
191 3,804,381
192 3,804,382

CLASS 260

2.5AW 3,804,782
2.5FP 3,804,783
14 3,804,784
17.4ST 3,804,785
18PT 3,804,786
22R 3,804,787
27R 3,804,788
29.2EP 3,804,789
29.2N 3,804,793
29.6TA 3,804,790
29.6M 3,804,794
29.6Z 3,804,797
30.4EP 3,804,795
30.8R 3,804,791
31.6 3,804,792
40R 3,804,799
42.016 3,804,802
42.043 3,804,796
42.047 3,804,801
42.33 3,804,798
45.75R 3,804,800
47CP 3,804,804
47EN 3,804,806
47UA 3,804,803
3,804,881
47C 3,804,805
65 3,804,807
67FP 3,804,808
75NH 3,804,810
75NK 3,804,809
75T 3,804,811
77.5AM 3,804,812
78P 3,804,813
80.78 3,804,815
87.5A 3,804,817
87.5R 3,804,814
88.1R 3,804,816
97.5 3,804,818
97.6 3,804,819
112.5 3,804,820
3,804,821
149 3,804,822
158 3,804,823
208 3,804,824
210.5 3,804,825
211.5R 3,804,826
3,804,827
233.3R 3,804,828
239AA 3,804,829
239.3T 3,804,830
240R 3,804,831
243C 3,804,832
253 3,804,833
254 3,804,834
256.4F 3,804,835
268K 3,804,836
270R 3,804,837
3,804,838
287R 3,804,839
290HL 3,804,840
293.58 3,804,841
293.63 3,804,842
294.9 3,804,843
295AM 3,804,844
296D 3,804,845
306 3,804,846
306.7 3,804,847
3,804,848
306.8F 3,804,849
309 3,804,850
326C 3,804,852
326.14R 3,804,855
326.4 3,804,853
326.44 3,804,856
326.5FL 3,804,854
326.5M 3,804,851
327TH 3,804,857
340.3 3,804,858
340.9 3,804,859
345.2 3,804,860
3,804,861
348R 3,804,862
377 3,804,863
396N 3,804,865
396R 3,804,864
397.5 3,804,866
409 3,804,867
429J 3,804,868
3,804,869
429R 3,804,870
429.7 3,804,871
437R 3,804,872
455A 3,804,873
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